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DISEASES CAUSED BY BACTERIA AND FUNGI

Mora, A. & Cavrini, C. (1959). Sulle mastiti actinogranulomatose della specie bovina. **[Mastitis with granulomatous lesions in cattle.]** — Nuova Vet. **35,** 122-129. [Summaries in English and French.] **937**

The gross and microscopic characters of granulomatous lesions in the udders of 16 cows are described. Pathogenic staphylococci, of different phage types, were isolated from 15 udders and *Pseudomonas pyocyanea* from the sixteenth.—T.E.G.R.

Calaprice, A. (1959). Contributo allo studio della patologia genitale nelle bovine. II. Sensibilità agli antibiotici degli stafilococchi patogeni isolati dal tratto utero-cervico-vaginale. **[Diseases of the genital tract in cows. II. Antibiotic sensitivity of pathogenic staphylococci isolated from the genital tract.]** —Acta med. vet., Napoli **5,** 93-100. [Summaries in English and French.] **938**

Pathogenic staphylococci isolated from cases of therapeutic failure or relapse of mixed infections of the genital tract of cows were tested for their antibiotic sensitivity. The majority were markedly resistant or only slightly sensitive to penicillin, streptomycin and sulphathiazole. Some of these were also resistant to erythromycin and chloramphenicol. The importance of these findings is discussed. —T.E.G.R.

Frank, N. A., Pounden, W. D., Weaver, C. R. & Gilmore, L. O. (1959). **Activity in milk of a mastitis-producing staphylococcus, a coliform organism, and Streptococcus agalactiae.** —Amer. J. vet. Res. **20,** 736-741. **939**

Milk samples, taken weekly for 4 years from about 17 cows, were inoculated with mastitis-producing organisms. The resistance of the milk to *Str. agalactiae* was estimated by the formation of acid, and to *Escherichia coli* and a staphylococcus by the methylene blue test. Results indicated that milk tended to be less resistant to bacterial activity when cows were first turned on to pasture and again in mid-summer.—M.G.G.

Puteanus, I. (1959). Die Pneumokokken-infektion des Kalbes und ihre Typenverteilung in den Regierungsbezirken Koblenz, Trier und Montabaur. **[Types of pneumococcus in calves.]** — Dtsch. tierärztl. Wschr. **66,** 616-619. [Summary in English.] **940**

Pneumococci were isolated from organs, sent for bacteriological examination, of 113 out of 3,868 calves. Most strains were *Str. pneumoniae* types 18, 33, 19 and 22. One belonged to type 1. Of 123 samples of sputum from the calf attendants on 37 farms, 23 yielded pneumococci of the same type as in the calves.—M.G.G.

Rømer, O. (1959). **Preparation of therapeutic sera for preventive treatment of pneumococcal infection in calves.** — Nord. VetMed. **11,** 563-680. [In English. Summaries in German and Danish. Author's summary modified.] **941**

Five different polyvalent pneumococcus sera comprising 30 types or groups of types have been prepared from cattle. Vaccines used for immunization consisted of bacterial suspensions in physiological saline for intravenous injection as well as adsorbate vaccines given subcutaneously.

The sera were tested for capsule titre and mouse-protecting property. In addition, a few calf protection tests were made, using rabbit serum or cattle sera.

The antibody content of the prepared cattle sera was discussed, as well as their specificity, the immunization methods used in their preparation, and their applicability in practice.

Lesslie, I. W. (1959). **Tuberculosis in domestic animals.**—Brit. med. J. January 3rd, 50. **942**

Soltys [*V.B.* **29,** 1289] had suggested that avian type tubercle bacilli are rarely found in cattle. L. gave details of observations at Weybridge on material from England and Wales. Of the last 3,934 specimens from cattle examined for TB. 52 (1·3%) contained avian tubercle bacilli. In 18 animals the disease was progressive and in 10 there were lesions in the udder and the organisms were present in the milk. In specimens from 870 (22%) of the 3,934 cattle bovine type tubercle bacilli were present and, in a further seven, bacilli of the human type. With the rapid eradication of TB. in cattle in Gr. Britain, TB. in pigs is now mostly caused by the avian type bacillus. In recent observations at Weybridge on material from 64 pigs from which lesions had been collected at abattoirs, avian type bacilli were isolated from 44 (69%) and bovine type from the other 20.—W.A.P.

Biering-Sørensen, U. (1959). Ophobning af tilfaelde af aviaer tuberkulose i en svinebesaetning. **[Endemic occurrence of avian tuberculosis in a herd of pigs.]**—Medlemsbl. danske Dyrlaegeforen. **42,** 550-552. [In Danish.] **943**

The endemic lasted for 15 weeks, the incidence in pigs delivered to the bacon factory rising to 100% in 7 weeks and then declining. Investigation showed that, while the pigs were normally fed well-cooked poultry offal, there had been a brief lapse in supervision of the heat treatment of the offal before the first cases were found in the slaughter pigs.—F.E.W.

McErlean, B. A. (1959). **Abortion in a sow due to the avian tubercle bacillus.**—Irish vet. J. **13,** 198-200. **944**

The sow was slaughtered and TB. lesions were found in the bronchial, gastro-hepatic and mediastinal lymph nodes. The uterine lymph nodes were enlarged and avian type bacilli were isolated from them. No hens on the farm reacted to tuberculin.—R.M.

Krauss, S. & Służewski, Z. (1959). Gruźlica zwierząt w Polsce. Stan zagruźliczenia zwierząt i szacunkowe ustalenie strat w gospodarce narodowej. **[Economic losses in Poland due to tuberculosis in cattle and pigs.]** —Med. Wet., Warszawa. **15,** 129-137. [In Polish.] **945**

The authors estimated that in Poland 3% of pigs and 20% of adult cattle are infected with TB. and the economic losses caused by TB. in 1956 amounted to 1·3 thousand million zl. In this estimate losses caused by TB. in calves and poultry were not included. The total production value of all farm animals in Poland was estimated at 60·2 thousand million zloty and the agricultural investments 9·6 thousand million zl.—M. Gitter.

Sobiech, T. & Wachnik, Z. (1959). Występowanie prątków gruźlicy w mięśniach świń zakażonych doświadczalnie. **[Presence of tubercle bacilli in muscle of experimentally infected pigs.]** — Med. Wet., Warszawa **15,** 524-528. [In Polish. Summaries in English and Russian.] **946**

Tubercle bacilli were found in muscles of 2 out of 22 pigs experimentally infected with the human strain of the organism. In one pig, infected orally, the organisms were found 68 days after infection, in the other, infected i/p, 7 days after infection. No tubercle bacilli could be found in muscles of pigs infected with the avian strain.—M. Gitter.

Cerbón, S. J., Bojalil, L. F. & Pérez-Tamayo, R. (1959). **Reinfection in guinea pigs with tuberculosis arrested by chemotherapy.** — Amer. Rev. respir. Dis. **80,** 554-558. [Summaries in French and Spanish. Authors' summary modified.] **947**

By means of small inocula of tubercle bacilli (0·02 mg.), it was shown that treated animals acquired a degree of resistance to reinfection manifested by the absence of lesions in internal organs. But dissemination was not inhibited since tubercle bacilli were recovered from some of the organs. Successive reinfections overcame this resistance and produced generalized disease similar to that in the control animals. The state of the first infection is not modified by re-infection.

Kleeberg, H. H. (1959). **The treatment of tuberculosis in man and animals with isoniazid. Preliminary report.** — J. S. Afr. vet. med. Ass. **30,** 69-73. **948**

In S. Africa, over 1,000 cattle with TB. have been treated with isoniazid at a daily dosage of 10 mg./kg. body weight. Rapid improvement in the condition of diseased animals, cessation of coughing, closing of open lung processes, and disappearance of tubercle bacilli from the milk were observed. Sensitivity to PPD tuberculin decreased steadily in 74% of 330 treated animals, and after 6 months' treatment, 29% were non-reactors; some of these became positive again

later. Although c.f. titres fell during treatment in some cases, there was no correlation between c.f. titres and skin sensitivity. P.M. examinations on 63 treated animals showed that particularly good responses had occurred in the chronic lung lesions. Viable tubercle bacilli could not be recovered by any method from 11 animals. Some strains recovered showed isoniazid resistance even after only 80 days' treatment. The prevention of infection by chemoprophylaxis with isoniazid has been observed.—A. ACKROYD.

Kress, F., Mathois, H. & Stöckl, W. (1959). Über allergische Erkrankungen im Verlaufe der Tuberkulinproduktion. [**Allergic diseases in persons engaged in the production of tuberculin.**] — Wien. tierärztl. Mschr. **46,** 582-586. [Summaries in English, French and Italian.] **949**

Four instances are described in which laboratory workers making bovine tuberculin developed allergic symptoms such as fever, headache, cough and circulatory failure. Acquired hypersensitivity to tuberculin was considered to be the cause. Measures to prevent further occurrences are described.—M.G.G.

Eidus, L., Diena, B. B. & Greenberg, L. (1959). **Observations on the use of tetrazolium salts in the vital staining of bacteria.** —Canad. J. Microbiol. **5,** 245-250. **950**

Tetrazolium salts are widely used in the biological sciences particularly to assay the viable organisms in B.C.G. vaccine. Studies on organisms other than B.C.G. were carried out to determine the concentration of salts required for optimal staining and the amounts capable of causing complete inhibition of bacterial growth.—R. V. L. WALKER.

Takeya, K., Yoshimura, T., Yamaura, K. & Toda, T. (1959). **Studies on the biologic properties of mycobacteriophage.** — Amer. Rev. respir. Dis. **80,** 543-553. [Summaries in French and Spanish.] **951**

Three phages were lytic against human and bovine and a fourth against human tubercle bacilli. Atypical avian tubercle bacilli, which had R-type colonies and were avirulent or weakly virulent to chickens and rabbits, were easily lysed by many of the phages. Typical avian tubercle bacilli, however, were not susceptible to lysis, although some were susceptible to growth inhibition by some of the phages—R.M.

Mukerji, A. (1959). **Studies on some aspects of Johne's disease.**—Indian vet. J. **36,** 109-110. **952**

Commenting on a paper by P. C. Nag, which appeared in the January issue of the journal, M. remarked that Johne's disease was becoming widespread among Indian cattle and that it had "penetrated into the village cattle of West Bengal".—R. N. MOHAN.

Retzlaff, N. (1959). Untersuchungen zur Pathogenese der Rotlaufendokarditis. [**Pathogenesis of swine erysipelas endocarditis.**]— Zbl. VetMed. **6,** 260-285. [Summaries in English, French and Spanish.] **953**

R. examined histologically heart valves from 10 apparently healthy pigs and 26 with erysipelas. He concluded that the initial stage of endocarditis was vascularization of the valve. This led to exudation of fibrin from the vessels, first occurring beneath the endothelium but extending to the surface after destruction of the endothelium.—R.M.

Kucsera, G. (1959). **Effect of type-specific antibodies on certain properties of bacterial strains of swine erysipelas in artificial media.** — Acta vet. Acad. Sci. hung. **9,** 13-18. [In English.] **954**

The antigenicity of *Erysipelothrix rhusiopathiae* Types A and B (isolated from tonsillar secretion of pigs) was gradually suppressed by 20 passages in broth containing 10% homologous type-specific precipitating serum; the bacterial strains were identified, by the precipitation test, as N serotypes. Their haemagglutinating power and their pathogenicity for mice were reduced. In broth containing 1% type-specific precipitating serum these changes did not occur until the 50th passage. It was observed that type-specific antibodies altered certain properties of the pathogenic strains in direct ratio to the amount of antibody used. It is considered that the antibodies have a similar effect on *E. rhusiopathiae* on the skin of immune pigs.

—T.E.G.R.

Dhanda, M. R., Lall, J. M. & Seth, R. N. (1959). **A case of listeric abortion in an ewe with a small scale survey of the incidence of agglutinins to Listeria in the sera of sheep.**— Indian vet. J. **36,** 113-124. **955**

Erysipelothrix (Listeria) monocytogenes was isolated from the uterine pus of an aborting ewe, earlier imported from Australia. The organism was pathogenic for sheep, goats, rabbits, and mice. Further, it was specifically

agglutinated by blood sera of 26 of 37 imported, but none of the 75 indigenous, sheep. Recovery of the organism from the lungs of several lambs affected with broncho-pneumonia in the same flock (reported separately) was also mentioned.

—R. N. MOHAN.

Tripolitova, A. A. (1959). **[Indirect haem-agglutination test for demonstrating antibodies to listeria.]**—Veterinariya, Moscow **36,** No. 8 pp. 74-77. [In Russian.] **956**

Antigen was prepared by adding one part of bacteria-free water extract of *E. monocytogenes* culture, heated on a water bath for an hour, to 2 parts of a 2·5% suspension of washed sheep erythrocytes and 2 parts of normal saline: technical details were given. The test was tried on 237 apparently healthy horses and 158 gave positive results at dilutions between 1 : 10 and 1 : 80. Of 14 cows on a farm where listeria infection had occurred, 1 gave a titre of 1 : 40. This test appears to require more positive proof of its value in listeria infection.—R.M.

Dhanda, M. R. (1959). **Immunisation of cattle against haemorrhagic septicaemia with purified capsular antigens. (A preliminary communication).**—Indian vet. J. **36,** 6-8. **957**

Treatment of *Pasteurella septica* (Roberts' type I) with various solvents, followed by fractionation with cold ethanol or ammonium sulphate, yielded 5 antigenic fractions, of which only those containing protein were immunogenic. Fraction IB, a protein, injected s/c in doses of 0·5 to 1·0 mg., conferred immunity in cattle for over 6 months.

—R. N. MOHAN.

Kamiński, J. (1959). Przypadek rodencjozy u owcy. **[Pseudotuberculosis in a sheep.]**—Med. Wet., Warszawa **15,** 586-587. [In Polish. Summaries in English and Russian.] **958**

Pasteurella pseudotuberculosis was recovered from liver lesions of a 5-month-old emaciated sheep which died after a spell of coughing and diarrhoea. P.M. examination revealed severe lungworm infestation and white, hard, pea-size lesions in the liver. Two g. pigs inoculated with a broth culture of the organism [route not stated] died after 3 days and the organism was recovered from liver, spleen and kidneys.—M. GITTER.

Dhanda, M. R. (1959). **A note on serotypes of Pasteurella septica and Pasteurella haemolytica found in animals, birds, and man in India.**—Indian vet. J. **36,** 327-335. **959**

D. presented results of immunological typing of 173 strains of *Past. septica* from 12 species of animals. Of these, 111 corresponded to Roberts' type I, 5 to type II, 1 to type III, 18 to type IV, and 2 to type V subsequently added to this system by Hudson. Serological typing of 36 strains of *Past. haemolytica* from sheep, goats, cattle, and buffaloes revealed at least 3 distinct types.

—R. N. MOHAN.

Bruyère, P., Vervust, H. & Biche, Y. (1959). La maladie des barbillons, forme chronique du choléra des poules dans la région de Lubero. II. Étude bactériologique. **["Wattle disease", a chronic form of fowl cholera.]**—Bull. agric. Congo belge **50,** 1063-1073. [In French. Summary in Flemish.] **960**

An account is given of the bacteriological study of strains of *Pasteurella septica* isolated from an outbreak of "wattle disease" in the Belgian Congo.—T.E.G.R.

Guilbride, P. D. L., Barber, L. & Kalikwani, A. M. G. (1959). **Bovine infectious keratitis. Suspected moth-borne outbreak in Uganda.**—Bull. epiz. Dis. Afr. **7,** 149-154. [Summary in French.] **961**

In an outbreak of bovine infectious keratitis with 20–30% morbidity it was observed that: most eyes were rimmed with lice *(Haematopinus eurysternus),* in some *Thelazia rhodesii* (eye worm) was present; many flies, mostly *Musca domestica,* were caught on the cattle; numerous moths, *Arcyophora longivalvis,* were seen feeding from the eyes of the cattle. From infected eye washings and conjunctival smears *Haemophilus bovis* was isolated in culture. The possibility of *A. longivalvis* being a vector of the disease is suggested.—T.E.G.R.

Fulton, McD., Forney, C. E. & Leifson, E. (1959). **Identification of Serratia occurring in man and animals.**—Canad. J. Microbiol. **5,** 269-275. **962**

A bacteriological study of over 20 strains of *Serratia* [*Chromobacterium*] isolated from man and animals is described in detail. While data are insufficient to indicate any pathological significance, these strains are secondary invaders contributing to the existing pathological conditions. These organisms may be pigmented or unpigmented but can be identified by the unusual coiled shape of the flagella.—R. V. L. WALKER.

Sonntag, E. (1959). Behandlungsversuche mit verschiedenen Kombinationspräparaten aus Tardomyocel, Tetracyclin und Leukomycin bei Euterentzündungen der Milchkühe. **[Treatment of bovine mastitis with combinations of benzylpenicillin, tetracycline and leucomycin.]**—Vet.-med. Nachr. No. 1 pp. 3-21. 963

Intracisternal application of combinations of tetracycline and leucomycin in cases of *Escherichia coli* mastitis in milch-cows gave rather better results than a combination of benzylpenicillin and leucomycin. Ointments were slightly superior to oily suspensions. Benzylpencillin with leucomycin gave best results in coccal and non-specific mastitis.

—F. R. Paulsen.

Shirlaw, J. F. (1959). **Observations on calf diseases in Kenya. I. Disease in calves due to Salm. dublin: the problem of immunity.** — Brit. vet. J. **115,** 201-213. 964

In the Kenya Settled Areas where there are now about 884,000 cattle, average mortality amongst calves in the first 6 months of life is about 25%. The main causes are white scour (colibacillosis), pneumonia, anaplasmosis, a non-specific glomerulonephritis and, most important, calf paratyphoid due to *Salmonella dublin*. Experiments to compare the effects in rabbits, mice and calves of the present standard Kabete paratyphoid vaccine (which is largely ineffective) with vaccines prepared by various methods show that an alum adjuvant Soysambu vaccine which is rich in bacterial substance and is formolized at 0·5% and adjusted to No. 4 opacity tube can give reasonably efficient protection. Calves should be vaccinated at 1 and 2 months and possibly 3 months old.—A. Ackroyd.

Smith, H. Williams. (1959). **The isolation of salmonellae from the mesenteric lymph nodes and faeces of pigs, cattle, sheep, dogs and cats and from other organs of poultry.** — J. Hyg., Camb. **57,** 266-273. [Author's summary modified.] 965

The mesenteric lymph nodes and faeces of pigs, cattle, sheep, dogs and cats and the intestinal wall and other organs of chickens were examined for salmonella. These animals were apparently healthy.

Salmonella was isolated from the mesenteric lymph nodes of sixty (12%) of 500 pigs, nine (4·5%) of 200 dogs, five (2·5%) of 200 cats and none of 200 cattle and 100 sheep. None was found in the chickens.

One (0·5%) of the cats and one (0·5%) of the dogs and six (1·2%) of an additional 500 healthy pigs were excreting salmonella in their faeces.

Of the seventeen serotypes found in pigs, *S. typhi-murium, anatum* and *cholerae-suis* occurred most frequently. All strains of *S. cholerae-suis* were isolated in brilliant green MacConkey broth; selenite broth was unsuitable for this purpose.

Despite the high isolation rate from pigs, clinical salmonella infection was diagnosed relatively infrequently. *S. cholerae-suis* was isolated from only one of seventeen epidemiologically unrelated cases of necrotic enteritis in pigs.

The results are discussed from the public health and agricultural aspects with particular regard to the part infected feed stuffs may play in causing salmonella infection in animals.

Dietz, O., Nagel, E. & Turich, K. (1959). Die lokal-antibiotische Behandlung der Bang-Synovitiden des Rindes und der infizierten Synovitiden des Pferdes mit Nebacetin cum Hydrocortison. **[Treatment of brucella synovitis in cattle and synovitis in horses with Nebacetin and hydrocortisone.]** — Tierärztl. Umsch. **14,** 274-278. 966

Little use has so far been made of exclusively local application of antibiotics in veterinary work. Of 30 cattle with brucella synovitis treated locally with "Nebacetin" (a solution of neomycin and bacitracin) and hydrocortisone, 23 were cured. There were 7 cures among 8 cases of infected synovitis and tendovaginitis in horses, treated in the same way.—F. R. Paulsen.

Roemmele, O., Westphal, W. & Berlik, E.-M. (1959). Zur Bewertung verschiedener serologischer Brucellose-Untersuchungsmethoden. **[Evaluation of serological tests in brucellosis.]**—Berl. Münch. tierärztl. Wschr. **72,** 154-158. [Summary in English.] 967

For the diagnosis of brucellosis the authors tested the slow agglutination and Meinicke flocculation (MR) reactions, using an appraisal code (given in a table), in 193 abortions on blood and where possible milk; 44% were positive but the findings and the clinical results often did not agree. In 91 cases of abortions the complement-fixation reaction was also tested.

In general even 25% agglutination at 1:80 had also a positive MR and c.f. test.

The agglutination test is much more

reliable than the MR which often does not become positive for some months after the abortion, but on chronically infected farms the MR is closely linked with agglutination to 50% at 1 : 40. The authors do not agree that the MR is always negative in vaccinated animals. Rapid agglutination methods are not recommended, while in pigs the MR is useless. In cattle the agglutination test repeated at 14-day intervals on blood and milk is by far the most satisfactory, though vaccinated animals can remain positive for at least 2 years. In doubtful cases the MR and c.f. test may be helpful but a final decision can only be made if the previous history and the area itself are considered in addition.—W. K. DUNSCOMBE.

Hochstein-Mintzel, V. (1959). Die Meinicke-Reaktion in der serologischen Diagnose der Rinderbrucellose. [**The Meinicke flocculation reaction for the serological diagnosis of bovine brucellosis.**]—Rindertuberk. u. Brucellose **8,** 139-146. **968**

The flocculation reaction (MR) was compared with the agglutination test in 5 groups of cows which were either probably, or certainly infected with brucellosis though culture was not possible, as follows:— (a) 127 diagnosed on serum and milk agglutination (5 sero-negative) together with known infection of their place of origin; (b) 161 mixed positive and negative sera; (c) 33 vaccinated at 6 months by single inj. of 60×10^9 organisms of Strain 19, with 12 others as controls (all 45 infected 18 months later when 4–5 months pregnant by virulent *Br. abortus*); (d) 34 from which *Br. abortus* had been isolated from the milk; (e) 60 sera from 33 animals tested 14–18 months after Strain 19 vaccination. The MR was negative in a number of cases even serum-positive 1 : 80, some sero-negative were MR-positive; in group (d) the MR was negative in 10%. It was concluded that a negative MR is of no diagnostic value. —W. K. DUNSCOMBE.

Schuster, E. O. (1959). Ein Beitrag zur Frage der Impftiter bei der Rinderbrucellose. [**The vaccination titre in bovine brucellosis.**] — Dtsch. tierärztl. Wschr. **66,** 360-362. [Summary in English.] **969**

S. used the agglutination, complement-fixation and Meinicke flocculation (MR) tests.

Of 996 animals tested after vaccination, 479 were negative to all 3 tests, but 517 showed some titre 18 months after vaccination (452 had agglutinins only, 65 reacted with the other 2 tests, 36 of the 65 came from infected or suspected farms). Of 428 tests with agglutinin titres in the typical vaccination range (1 : 20–1 : 80) only 19 were c.f. or MR–positive, and at least some of these had come from stock about which there was no record.

S. states that in vaccinated animals the c.f. test and MR become negative earlier than agglutination, and in infected animals remain positive longer, and this appears useful for differentiation of vaccination from infection titres. The c.f. test is the most suitable confirmatory and differentiating test.

—W. K. DUNSCOMBE.

Cedro, V. C. F., Cisale, H. O. & Cacchione, R. A. (1959). La prueba de Coombs en brucelosis animal. (Comunicación previa.) [**The Coombs test for brucellosis in animals.**] —Rev. Inst. Ganad. No. 5 pp. 3-6. [Summaries in English and French.] **970**

With the Coombs test, incomplete antibodies against brucella were demonstrated in the serum of goats, pigs and cattle which were negative or reacted only at low titre when tested by direct methods.—M.G.G.

Doleżal, M., Lutyński, R. & Wiśniowski, J. (1959). Zastosowanie obcogatunkowej surowicy antyglobulinowej do odczynu Coombsa przy brucelozie bydła. [**Use of human antiglobulin serum in the Coombs test in bovine brucellosis.**] — Med. Wet., Warszawa **15,** 334-338. [In Polish. Summaries in English and Russian.] **971**

Using human and bovine antiglobulins in the Coombs test, comparative studies were conducted on 60 samples of bovine serum (10 from infected and 50 from non-infected animals). The results coincided in all cases. In addition 91 samples of bovine serum from infected animals were examined with human antiglobulin serum. The authors concluded that human antiglobulin serum can be used successfully in the Coombs test in bovine brucellosis.—M. GITTER.

Glenchur, H., Zinneman, H. H. & Hall, W. H. (1959). **Massive, continued exposure to Brucella abortus causing the blocking phenomenon in rabbits.**—J. Lab. clin. Med. **54,** 817-818. **972**

Brucella blocking antibodies are produced coincident with a marked hyperglobulinaemia by repeated i/v inj. of large amounts of brucella antigen. But prolonged antigenic stimulus did not paralyse the production of

agglutinating antibodies. Change in electrophoretic mobility of the blocking antibody could not be explained.—R.M.

Orlov, E. S. (1959). **[Brucellosis in farm animals: abstracts of 21 original papers submitted for publication.]**—Veterinariya, Moscow **36,** No. 8 pp. 46-56. [In Russian.] **973**

Among the topics dealt with in this collection of papers are :— therapeutic use of brucella hyperimmune serum; simultaneous inoculation of anthrax and brucella vaccines; double intradermal allergic test in sheep; breed variation in susceptibility of sheep to infection; serological diagnosis in buffaloes; intradermal allergic test in pigs; "Berenil" therapy of bovine brucellosis.—R.M.

Bendtsen, H. (1959). **Porcine brucellosis. Preliminary report on the fifth outbreak of porcine brucellosis in Denmark.** — Nord. VetMed. **11,** 391-398. [In English. Summaries in German and Danish.] **974**

This outbreak affected 9 sows and a boar in a herd of 32 sows. Miliary lesions were found in the uterus of 2 sows. Brucellosis had been previously diagnosed in hares in the same locality.—R.M.

Beal, G. A., Taylor, D. B., McCullough, N. B., Claflin, R. M. & Hutchings, L. M. (1959). **Experimental infection of swine with Brucella melitensis (Mediterranean type).**—Amer. J. vet. Res. **20,** 634-641. **975**

In the U.S.A. *Br. melitensis* (American type) is found in pigs and goats in some States and many human infections have been reported. This type produces more urease than the Mediterranean type, so to see if passage through pigs produced any change the authors infected 24 young pigs with 4 Mediterranean strains. 8 pigs (2 for each strain) were infected (a) orally, (b) s/c, (c) i/v, and were killed after from 65 days to 9 months; blood and tissue cultures were taken P.M.

The strains recovered from these pigs given the 4 parent strains revealed no differences and there was no change in the infectivity for g. pigs. *Br. melitensis* was recovered from one pig infected orally.

—W. K. Dunscombe.

Mathur, T. N. (1959). **Human brucellosis in Punjab, its importance to the veterinarians.** —Indian vet. J. **36,** 181-188. **976**

M. compared generally the known prevalence of brucellosis in man and in animals in different parts of the Punjab and pleaded for greater consciousness about the disease in man and more extensive surveys in animals. Mention was made of 10 strains, all *Brucella melitensis,* recovered from human blood cultures, and further work on typing of strains from animals was recommended.

—R. N. Mohan.

Battelli, C. (1959). Inchiesta sulla diffusione della brucellosi tra i veterinari di alcune provincie meridionali. **[Incidence of brucellosis among veterinarians in southern Italy.]** —Vet. ital. **10,** 799-816. **977**

A questionnaire circulated to 438 veterinarians in southern Italy elicited information from 329. Of these, 67 had contracted clinical brucellosis (80% confirmed serologically) and 121 exanthema on the arm. Cattle were responsible for 89%; goats for 8%. Of all the cases 74% were associated with manual removal of placenta from cows, 15% with other obstetrical interventions in cattle. Until 1941 the number of cases of brucella infection of bovine origin in veterinarians was 7; between 1946 and 1958 there were 51, the highest incidence being in 1952–1958, with 7 cases each in 1955 and 1956. Occasional laboratory infection with *Br. abortus* Strain 19 vaccine was also recorded.—T.E.G.R.

van Drimmelen, G. C. (1959). **Bacteriophage typing applied to strains of Brucella organisms.**—Nature, Lond. **184,** Suppl. No. 14 p. 1079. **978**

A *Brucella* phage grown on Strain 19 of *Br. abortus* was active on laboratory strains and the WHO reference strain 544 of *Br. abortus,* but not on the WHO reference strains 16*M* of *Br. melitensis* and 1330 of *Br. suis* and a *Brucella* variant isolated from ram semen.—M.G.G.

Geissler, A. (1959). Die Bedeutung der Ureaseaktivität der Brucella-Bakterien. **[Importance of urease activity in brucella.]**—Zbl. VetMed. **6,** 563-574. [Summaries in English, French and Spanish.] **979**

G. studied urease activity of smooth colonies of 36 strains of the 3 species in a solution of urea with phenol red as indicator. The results largely confirmed those of other authors. Activity of Danish strains of *Br. suis* was less than that of American strains.

—R.M.

Katitch, R., Puhatch, I. & Vukitchevitch, Z. (1959). Le rôle des facteurs α, β, et ϵ de la toxine W. perfringens agni (A, C et D) sur le développement de la bactériémie dans les entérites toxiques. **[Role of alpha, beta and**

epsilon factors of Clostridium welchii toxin (A, C and D) in the development of bacteraemia in enterotoxaemia.]—Rev. Immunol. **23,** 294-298. **980**

Mice died after oral administration of broth cultures of *Cl. welchii* and the organisms were recovered from the blood, but those infected with washed organisms survived. Examination of the blood of g. pigs dying from experimental enterotoxaemia revealed lecithinase α in those infected with *Cl. welchii* Type A, β factor in those infected with Type C, and ε factor in those infected with Type D. It is concluded that these factors increase the permeability of the mucous membrane of the intestine.—M.G.G.

Semerdzhiev, B., Khristov, S. & Mateva, V. (1958). **I. [Action of caffeine on formation of antitoxin in sheep against Clostridium welchii Type D.] II. [Action of strychnine on formation of antitoxin in sheep against Clostridium welchii Type D.]**—Izv. vet. Inst. po Virusologiya, Sofia **1,** 119-125 & 129-133. [In Bulgarian. Summaries in English and Russian.] **981**

I & II. The authors claimed that higher titres of antitoxin were obtained when ordinary doses of caffeine or 0·1–0·5 ml. of 0·1% soln. of strychnine nitrate were inoculated at the same time as inoculation of vaccine.—R.M.

Jentzsch, K. D. & Gottschalk, C. (1959). Ein Beitrag zur Typhlitis infectiosa des Kaninchens. **[Infectious typhlitis in rabbits.]**—Berl. Münch. tierärztl. Wschr. **72,** 406-409. [Summary in English.] **982**

Infectious typhlitis similar to that described by Cohrs & Schulte [*V.B.* **24,** 3449] killed 15 of 20 domesticated rabbits on one premises and 2 on other premises. The condition was reproduced in a healthy rabbit by inoculation of liver extract from a rabbit that had died. Aetiology was not studied.—R.M.

Avery, R. J., Dolman, C. E., Stovell, P. L. & Wood, A. J. (1959). **A natural outbreak of Clostridium botulinum type C intoxication in ranch mink arising from pork liver.**—Canad. J. comp. Med. **23,** 203-209. [Summary in French.] **983**

The outbreak described occurred after feeding with good quality pig's liver. Studies indicated that Type C beta toxin was elaborated from the liver during handling prior to freezing. This adds to the substantial evidence implicating the Type C strain of *Cl. botulinum* in botulism in mink, and the apparent failure of C α antitoxin to neutralize C β toxin infections indicates the need for further work on the Type C toxin. Recommendations emphasize the need for adequate heating of the meat, proper sanitary handling and processing of feed ingredients, and for active immunization with suitable toxoids.

—R. V. L. Walker.

Morgan, W. J. Brinley, Melrose, D. R. & Stewart, D. L. (1959). **The effect of streptomycin on the survival of Vibrio fetus in semen and other diluents stored at 5° and −79°C.**—J. comp. Path. **69,** 257-267. **984**

V. fetus survived storage in egg yolk-citrate buffer containing 500 μg./ml. streptomycin for 3 days at 5° and for 180 days at −79°C., but did not survive 4 hours' storage at 5°C. in reconstituted skim milk diluent, broth, Brewer's medium, or saline containing the same concentration of streptomycin. Infectivity experiments with heifers using infected semen diluted with egg yolk–citrate buffer or skim milk diluent containing the same conc. of streptomycin confirmed these findings.—A. Ackroyd.

Frank, F. W., Meinershagen, W. A., Scrivner, L. H. & Bailey, J. W. (1959). **Antibiotics for the control of vibriosis of ewes.**—Amer. J. vet. Res. **20,** 973-976. **985**

20 pregnant ewes were fed 80 mg. chlortetracycline daily from the 27th day before oral infection with *Vibrio fetus* until lambing; and 16 were inoculated i/m with a suspension of penicillin and dihydrostreptomycin on the 5th and 6th days after infection and thence were fed 80 mg. chlortetracycline daily until lambing. 44 were infected but not treated; 23 of these had been infected and fed chlortetracycline in the preceding pregnancy and lambed normally, and 21 were controls. The numbers aborting in the 4 groups were 3, 2, 3, and 15. It is concluded that antibiotic therapy may be of value in a flock with vibriosis.—M.G.G.

I. Lincoln, R. E. & DeArmon, I. A., Jr. (1959). **Homogeneity of response of mouse and guinea pig strains to virulence tests with Bacillus anthracis and Pasteurella tularensis.**—J. Bact. **78,** 640-650. **986**

II. DeArmon, I. A., Jr. & Lincoln, R. E. (1959). **Number of animals required in the bio-assay of pathogens.** — Ibid. 651-657. [Authors' summaries modified.] **987**

I. The authors studied the homogeneity

of various animal strains and compared the reliability of the graded and quantal methods of testing virulence. It was shown that the cost of virulence tests could be reduced by reducing the number of animals.

II. Simple equations, useful in estimating the approximate animal requirements for bio-assays generally used in the study of organism pathogenicity, were given.

Tölgyesi, G. (1959). Papierelektrophoretische Eiweissuntersuchungen. I. Leptospirosis und Tetanus. **[Paper-electrophoresis of serum proteins. I. Leptospirosis and tetanus.]**—Acta vet. Acad. Sci. hung. **9,** 43-54. [In German.] **988**

The relative concentration of gamma-globulin increased in two horses experimentally infected with *Leptospira pomona,* but this reaction was only slight in two others infected with *L. hyos.* Injection of penicillin checked the rise in gamma-globulin. A beta-2 fraction appeared in the serum of 5 horses with tetanus.—R.M.

Biering-Sørensen, U. & Fischer-Larsen, J. (1959). Betaendelsestilstande i halen hos slagterisvin. **[Inflammatory conditions of the tail in slaughter pigs.]**—Medlemsbl. danske Dyrlaegeforen. **42,** 524-525. [In Danish.] **989**

The condition described by Justesen [*V.B.* **29,** 3411] has been found also in the Odense Export Bacon Factory. 40–50% of those pigs which show typical ulceration are condemned at meat inspection on the grounds of macroscopically demonstrable spread of infection to the lungs and/or bones. Of 59 affected pigs found in 4 months 28 were condemned. At times spread of infection was demonstrable even with completely healed "amputations". Illustrations are given of a typical case.—F.E.W.

Gianforte, E. M., Brown, R. G. & Burkhart, R. L. (1959). **Enzymatic digestion, an aid in primary isolation of bacteria from diseased tissues.**—J. Bact. **78,** 463-468. **990**

Minced tissues from farm animals with suspected bacterial infections were digested with trypsin or "X–108", a proteolytic enzyme prepared from the fermentation beer of the fungus *Conidiobolus brefeldianus,* for 1½ hours at 37°C. Portions of digested material were then transferred to culture media. *Pasteurella septica, Salmonella typhimurium, S. cholerae*-suis and *Corynebact. pyogenes* were isolated by this method even when untreated tissues gave negative cultures. Enzyme treatment did not appear to improve recovery of staphylococci or coliform organisms.—R.M.

Fortushnyi, V. A., Govorov, A. M., Tsybenko, I. Z., Boĭchenko, A. S. & Kalitenko, E. T. (1959). **[Stachybotryomycosis in cattle and its treatment.]** — Veterinariya, Moscow **36,** No. 9 pp. 67-70. [In Russian.] **991**

Intoxication caused by mouldy food infected with *Strachybotrys alternans* had hitherto been observed only in horses. The authors stated that in 5 oblasts of the Ukraine about 4,000 cattle were poisoned by this fungal toxin in the winter of 1958–59, and most of them died. The initial signs were fever, drop in milk yield and diarrhoea with increased salivation and reduced appetite. Later the diarrhoea became more severe, muscular twitches developed, and the animal collapsed. Death occurred 4–6 or sometimes 7–10 days after onset of illness. Leucocytes in the blood fell to 500–700/cu.mm. P.M. examination revealed widespread haemorrhages and blood-stained exudates. Bacteriological examinations were negative, and no poisonous plants were identified in fodder. Batches of mouldy straw contained the fungus. Typical stachybotryomycosis was seen in horses on the same farms as affected cows. Suitable symptomatic treatment was said to cure early cases.—R.M.

Marchenko, G. F. & Resnyanskaya, E. V. (1959). **[Fusariotoxicosis of pigs in the Stavropol territory.]**—Veterinariya, Moscow **36,** No. 9 pp. 70-72. [In Russian.] **992**

Poisoning commenced on several farms 2–3 days after feeding certain batches of prepared meal. Between 10 and 100% of affected pigs died or were slaughtered. Illness lasted for from a few days to a few weeks and was characterized by eruption of red spots 1–6 cm. diam. in some pigs and by oedema of eyelids and neck with yawning and dyspnoea in others. Fungal toxin was demonstrated in meal by injecting into rabbits an ether extract and *Fusarium sporotrichoides* was among the fungi isolated. Affected batches of meal had been prepared from crops overwintered in the field.—R.M.

Bloshitsyn, (1959). **[Illness in calves and cows after eating mouldy corn-cobs.]** — Veterinariya, Moscow **36,** No. 9 p. 73. [In Russian.] **993**

45 cows and 6 yearlings developed laminitis after eating corn-cobs that had been

buried under snow all winter. The cobs were heavily infected with fungi of the genera *Alternaria, Mucor, Rhizopus, Fusarium, Trichothecium* and *Penicillium*.—R.M.

Scheifer, B. & Weiss, E. (1959). Soormykose des Darmes bei Katzen. **[Intestinal mycosis in cats.]**—Dtsch. tierärztl. Wschr. **66,** 275-277. [Summary in English.] **994**

Fungi morphologically resembling *Candida albicans* were seen in sections of intestine from two cats which had been treated with antibiotics. Both animals showed an ulcerative enteritis which was most severe in the colon. Secondary mycosis should be considered when necrotizing and diphtheritic lesions are encountered in the intestine in the cat.—E. G. White.

van Uden, N., Braço Forte, M. C., Jr. & Carmo Sousa, J. D. (1959). **The occurrence of "Cryptococcus neoformans" in the equine intestinal tract.**—Bull. Off. int. Epiz. **51,** 82-97. [In English.] **995**

This is the original English text of a paper previously published in a French translation [see *V.B.* **28,** 3170] in which, it is stated in a footnote, there were "a few errors".

—E. G. White.

McPherson, E. A. (1959). **The assessment of antimycotic agents for cattle ringworm Trichophyton verrucosum.**—Vet. Rec. **71,** 539-543. **996**

G. pigs experimentally infected with *T. verrucosum* were found unsuitable as a test animal for topical antimycotic preparations because spontaneous cure occurred within 26 days in control and treated lesions alike. The production of skin lesions in calves by intradermal inoculation of spore suspensions was a satisfactory method of assessing the effect of antimycotic agents, and up to 36 lesions were available on a single calf. None of nine different agents influenced the duration of the lesions and all began to heal at the same time as control lesions. A clinical trial was carried out by introducing an infected heifer for 24 hours into a field with 72 Ayrshire calves. The 22 animals which became infected were treated with various antimycotic agents. No conclusion as to their efficacy could be drawn. The greatest effect was with 25% acetic acid coloured with Brilliant Green but this was used when the outbreak was on the wane. The most that available agents produce is some limitation of extension of lesions and reduction in dissemination of infective material. The risk to human personnel in instituting treatment of established outbreaks must be considered in view of the very doubtful effectiveness of agents at present available.

—E. G. White.

Kelly, D. C. & Anthony, H. D. (1959). **Dermatomycoses of chinchilla.** — Nat. Chinchilla Breeder **15,** No. 9. pp. 12-13. [Nat. Chinchilla Breeders of America, Res. Bull. No. 37.] [Authors' summary modified.] **997**

Laboratory studies on a limited number of animals, employing the Wood's lamp, direct microscopic examination, and culture, indicated that the aetiological factor of fur-chewing in chinchillas is not a fungus.

Animals with alopecia and erythema of the face, nose, and feet were found to be infected with *Trichophyton mentagrophytes*. Such animals responded to fungicidal treatment.

Bugyaki, L. (1959). Dermatose contagieuse des ruminants et du cheval (Streptotrichose, actinomycose cutanée). **[Cutaneous streptothricosis.]**—Bull. Off. int. Epiz. **51,** 237-251. [Summaries in English and Spanish.] **998**

The author suggests that until the nomenclature of the organisms responsible for dermatitis in horses and ruminants has been finally agreed, the name *Dermatophilus congolensis* should be retained for the agent and "contagious dermatitis" for the disease, which affects cattle, sheep and horses in the Belgian Congo. He describes the organism and the contagious disease it causes. Five daily doses of penicillin, aureomycin or terramycin gave good results. Recovery from natural infection gave no immunity. [See also *V.B.* **28,** 2445.]—E.G. White.

Austwick, P. K. C., Gitter, M. & Watkins, C. V. (1960). **Pulmonary aspergillosis in lambs.**—Vet. Rec. **72,** 19-20 & 21. [Authors' summary modified.] **999**

Seven cases of pulmonary aspergillosis in lambs, one of them subclinical, are described. *Aspergillus fumigatus* was recovered from all lung lesions. Three types of hyphal growth were observed in the lesions.

Emmons, C. W. & Piggott, W. (1959). **Amphotericin B and griseofulvin in the treatment of experimental systemic mycoses.**—Antibiot. & Chemother. **9,** 550-556. [Summary in Spanish p. 575. Authors' summary modified.] **1000**

Survival times of mice with experimental blastomycosis, cryptococcosis and coccidioidomycosis were extended after i/v inj. of

amphotericin B at 2·2 mg./kg., although this dosage was toxic particularly for mice with histoplasmosis. Some mice surviving treatment still harboured fungus, but tissues of mice which survived after treatment with the toxic dose were sterile. Solubilized amphotericin B at 1·4 mg./kg. neither extended survival time nor sterilized tissues of surviving mice.

Griseofulvin given orally or intravenously did not protect mice from death or sterilize tissues in experimental blastomycosis, histoplasmosis, cryptococcosis, or coccidioidomycosis.

Coles, J. D. W. A. & Cumming, R. B. (1959). **Chronic respiratory disease: its nature and eradication.** — J. S. Afr. vet. med. Ass. **30,** 5-14. **1001**

After discussing aetiology, diagnosis and treatment the authors outlined the measures taken in South Africa to eradicate chronic respiratory disease in chickens and infectious sinusitis in turkeys. By flock testing for PPLO, disposing of infected flocks immediately or over a 12 month period, allowing infected houses to remain empty for a month and restocking with birds absolutely or reasonably free from all diseases transmissible through the egg, PPLO-negative flocks are being established and there is every prospect of virtually ridding the Union of avian respiratory diseases within 2 years.

—A. Ackroyd.

Chalquest, R. R. & Fabricant, J. (1959). **Survival of PPLO injected into eggs previously dipped in antibiotic solutions.** — Avian Diseases **3,** 257-271. **1002**

When hatching eggs were warmed to 37°C. and immersed in detergent solution (Triton N 56 or X 100) containing oxytetracycline, erythromycin or streptomycin in concentrations from 100–1000 p.p.m., at 5°, 10° and 17°C. for 30–180 min., their hatchability was not affected and antibiotic could be detected in the yolk in amounts up to 0·5 μg./g. and in the albumen up to 7·5 μg./g. Significantly fewer re-isolations of pleuropneumonia-like organisms could be made at the time of hatch from chicks from eggs dipped in 400 p.p.m. erythromycin at 5°C. for 30 min. and inoculated with various amounts of an S_6 pathogenic type of PPLO Strain 293. Results from eggs dipped in 500 p.p.m. oxytetracycline were variable.—A. Ackroyd.

Stumpel, M. E. M. (1959). Over een verband tussen chronic respiratory disease (C R D) en chronische coryza bij kippen. **[Relationship between chronic respiratory disease and chronic coryza in fowls.]** — Tijdschr. Diergeneesk. **84,** 741-750. [In Dutch. Summaries in English, French and German.] **1003**

Chronic coryza of fowls occurred in the Netherlands, sometimes after administration of Newcastle disease and infectious bronchitis vaccines in the drinking water. There was poor response to streptomycin therapy. From affected birds S. isolated five strains of pleuropneumonia-like organisms, serologically and culturally like the standard strain associated with chronic respiratory disease in the U.S.A. He discussed the preparation of vaccines free from PPLO and the possibility of rearing flocks free from infection.—R.M.

See also abstr. **1020** (effect of chinosol and formalin on brucella and tubercle bacilli in F. & M. disease vaccine); **1052** (virus and brucella abortion in sheep); **1266** (report, Western Australia); **12 7-1268** (reports, New Zealand); **1269** (report, Nigeria); **1271** (report, Bechuanaland); **1272** (report, Netherlands); **1273** (report, Belgian Congo).

DISEASES CAUSED BY PROTOZOAN PARASITES

da Silva, J. M. (1959). Notes sur l'étude de la trypanosomiase animale au Mozambique. **[Animal trypanosomiasis in Mozambique.]**— Bull. epiz. Dis. Afr. **7,** 137-147. [Summary in English.] **1004**

Although 57–73% of cattle herds in the Maputo region, south Mozambique, are infected with *T. congolense* and *T. vivax,* morbidity and mortality rates are low. All of 7 cows transported to Gavuro, an area infested with *Glossina morsitans* died from trypanosomiasis within 12 weeks, but of 16 cattle brought to Maputo from an area free from trypanosomiasis, all developed symptomless infections. Examination of the blood of 31,190 cattle and other domestic animals in Maputo revealed infection in 1·62%. In cattle tested repeatedly trypanosomes were found only at irregular intervals. Blood examination in 16,567 game animals in Govuro revealed trypanosomes in only 258. It is concluded that strains of trypanosomes in Maputo are mildly pathogenic, and cause disease only when cattle lose condition through tick infestation and malnutrition.—M.G.G.

Baker, J. R. (1959). **The effect of nitrofurazone on Trypanosoma rhodesiense infections in mice.**—Brit. J. Pharmacol. **14,** 408-410. [Author's summary modified.] **1005**

Mice infected with a freshly isolated strain of the trypanosome were not cured by ten daily i/p doses of 50, 100, 200, or 400 mg./kg. of nitrofurazone. The highest dosage killed some mice.

Trager, W. (1959). **Development of Trypanosoma vivax to the infective stage in tsetse fly tissue culture.** — Nature, Lond. **184,** 30-31. **1006**

Continuous cultures of *T. brucei, T. congolense* and *T. vivax* have been maintained on tissues from the alimentary canal and salivary glands of *Glossina palpalis.*

T. vivax cultures can only be obtained by inoculating blood from a sheep with chronic infection into two-day-old tissue cultures and incubating them at 30° to 32°C.

Two successful transmissions from culture to sheep have been effected. Since only slight infections developed, it may prove possible to immunize against the parasite by inoculation of attenuated cultures.

—B. M. Wilson.

Berberian, D. A. (1959). **Relationship of Mediterranean kala-azar to canine kala-azar.** — Trans. R. Soc. trop. Med. Hyg. **53,** 364-365. **1007**

Five of 24 dogs harboured *Leishmania* in a village in northern Syria where kala-azar had been diagnosed in 3 infants.—M.G.G.

Hammond, D. M., Clark, G. W., Miner, M. L., Trost, W. A. & Johnson, A. E. (1959). **Treatment of experimental bovine coccidiosis with multiple small doses and single large doses of sulfamethazine and sulfabromomethazine.**—Amer. J. vet. Res. **20,** 708-713. **1008**

Experimental coccidiosis due to *Eimeria bovis* was controllable by unexpectedly small dosage of sulphonamides. Single treatment with sulphamethazine or sulphabromomethazine at 1·5 grs./lb. body weight 13 days after inoculation controlled coccidiosis, as did either drug at 0·15 grs./lb. 10–18 days after inoculation. There was no interference with development of immunity.—F. R. Paulsen.

Glättli, H. R. (1959). Formo-Cibazol in der Prophylaxe und Behandlung der Kokzidiose. **["Formo-Cibazol" in the prevention and treatment of coccidiosis in rabbits and cattle.]** — Schweiz. Arch. Tierheilk. **101,** 459-461. [Summaries in English, French and Italian.] **1009**

Oral treatment with a combination of formaldehyde and sulphathiazole, of low solubility, prevented and cured coccidiosis in rabbits and cattle.—M.G.G.

Shumard, R. F. (1959). **Experimentally induced ovine coccidiosis. II. Use of water soluble nitrofurazone as a therapeutic.**—Vet. Med. **54,** 477-479. **1010**

"Soluble" Furacin (nitrofurazone), 0·008%, 0·01%, and 0·0133%, in the drinking water prevented mortality and reduced morbidity in lambs experimentally infected with sporulated oocysts of 6 species of *Eimeria.* Medication improved weight-gain. There was a lack of complete immunity in all groups to any one species.—F. R. Paulsen.

Scholtyseck, E. & Przygodda, W. (1959). Untersuchungen über die Coccidieninfektion bei Nestlingen. **[Coccidia in nestling birds.]** —Z. Parasitenk. **19,** 353-357. **1011**

Oocysts of 3 coccidia (*Isopora lacazei, Eimeria labbeana* and *E. columbarum*) were found in 17% of 269 nestling birds belonging to 21 species. Infection appeared to be very slight and acute coccidiosis was not seen. The highest incidence was in domestic pigeons (20 of 63 infected).—R.M.

Tsur-Tchernomoretz, I. & Pipano, E. (1959). **[Growth and multiplication of Koch bodies of Theileria annulata in rodents' spleen tissue culture.]**—Refuah vet. **16,** 3. [In Hebrew.] [In English. p. 51.] **1012**

Growth and multiplication of Koch bodies of *Th. annulata* and *Th. parva* were obtained in six passages on rodents' spleen tissue cultures, and were maintained for more than two months. Fifth passage material has been inoculated and infected a calf. The cultures were obtained by using tissue implants, embedded and clotted on cover slips, with bovine plasma and chick embryonic extract.

—B. M. Wilson.

Barron, C. N. & Saunders, L. Z. (1959). Ein Fall von intraokulärer Toxoplasmose beim Hund. **[Ocular toxoplasmosis in a dog.]**—Schweiz. Arch. Tierheilk. **101,** 349-354. [Summaries in English, French and Italian.] **1013**

Toxoplasma pseudocysts were identified in sections of an eye removed surgically. There were inflammatory lesions in the retina, iris and optic nerve.—R.M.

Purser, D. B. & Moir, R. J. (1959). **Ruminal flora studies in the sheep. IX. The effect of pH on the ciliate population of the rumen in vivo.** — Aust. J. agric. Res. **10,** 555-564. **1014**

In Merino sheep (on an adequate diet) given daily infusions into the rumen of 7, 35, and 70 g. of glucose in solution (1, 5, and 10% of the ration) the ruminal pH fell 2–4 hours after feeding from a mean of 5·66 without added glucose to 5·4 at the higher glucose levels. The concentration of ammonia also decreased; that of volatile fatty acids increased. At the 10% glucose level, food intake was depressed, and the ruminal pH did not fall below that at the 5% glucose level. A significant daily fall in the ruminal pH minima was found during the 3-day sampling period.

No consistent differences in the concentration of ciliates were found at four sites in the rumen, either before or 1 hour after feeding, although there were differences between sheep. Samples from the bottom of the rumen, before and from 16 hours after feeding, showed: (a) only oligotrichs in the ciliate population; (b) marked diurnal fluctuation in the ciliate population, the concentration after feeding falling to as low as one-third of the prefeeding levels; (c) a diurnal cycle for dividing protozoa which indicated that multiplication was inhibited by the low pH 2–4 hours after feeding.

The average ciliate concentration fell daily during the 3-day sampling period. This was related to a fall in the pH minima over this period.

It was concluded that the minimum pH within the rumen is an important factor controlling rumen protozoal concentrations, and the need for cognizance of this in studies of rumen protozoa is stressed.

Wright, D. E. (1959). **Hydrogenation of lipids by rumen protozoa.** — Nature, Lond. **184,** 875-876. **1015**

Hydrogenation of linoleic acid, linseed oil and chloroplast fat was demonstrated in suspensions of rumen protozoa washed free from bacteria. There was considerable conversion of triene acid to diene acid and monoene to stearic acid, but apparently little of diene to monoene acid.—M.G.G.

See also absts. **1266** (report, Australia); **1270** (report, Northern Rhodesia); **1271** (report, Bechuanaland).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

Fogedby, E. (1958). **The control of foot-and-mouth disease in Europe. Paper presented at the International Symposium on Virology 27th - 29th June, 1958.** pp. 3. Rome: Food and Agriculture Organization of the United Nations. European Commission for the Control of Foot-and-Mouth Disease. [FAO/59/9/6784.] **1016**

Since vaccination began, F. & M. disease has been brought under control or reduced in many European countries where it was epidemic. In countries still heavily infected or under the threat of infection, the European Commission for the Control of Foot-and-Mouth Disease recommends vaccination. When outbreaks decrease, vaccination may be supplemented by the slaughter of infected animals and, later, vaccination is reduced and stamping-out is adopted. The threat of invasion from Asia, Africa and South America is discussed.—M.G.G.

Kuwert, E. & Hoàng, T. N. (1959). Vergleichende Titration des Maul-und-Klauenseuche-Virus vom Typ O in der Gewebekultur und an der Rinderzunge. **[Comparative titration of foot and mouth disease virus type O in tissue culture and on the bovine tongue.]**— Arch. exp. VetMed. **13,** 293-297. **1017**

The authors used strain O_2 virus and tissue cultures of bovine foetal kidney cells; 18-month-old bulls were used for the tongue titrations. Each of 8 virus dilutions was injected i/d into the tongue at 3 sites, read at the latest 24 hours after slaughter; the c.f. test was performed at the same time. In 18 virus tests the titres in tongue and tissue culture (TC) agreed very closely, but the c.f. titres showed considerable variations.

It was concluded that since the i/d and TC tests give practically identical titres the TC method can replace the much more costly tongue titration; conclusions based on results of the c.f. test would not always be reliable.

—W. K. Dunscombe.

Brown, F. & Stewart, D. L. (1959). **Effect of proflavine on the formation of the virus of foot-and-mouth disease and its infective ribonucleic acid in pig kidney tissue culture monolayers.**—Nature, Lond. **184,** 74-75. **1018**

Proflavine has been shown to inhibit the growth of bacteriophage and some animal viruses (vaccinia, fowl plague, poliomyelitis).

Its action is regarded as due to the inhibition of cytoplasmic protein synthesis but low concentrations of proflavine induce mutations in the virus of poliomyelitis, so the compound probably has some action on the nucleic acid of this virus. The authors studied the effect of proflavine on the synthesis of infective F. & M. disease virus and its ribonucleic acid in pig kidney tissue culture cells. Their experiments indicated that at low concentrations proflavine exerted a differential inhibiting effect on the formation of viral protein, with the result that infective ribonucleic acid was still formed whereas the synthesis of infective virus was greatly inhibited.—E.V.L.

Dinter, Z., Phillipson, L. & Wesslén, T. (1959). **Properties of foot-and-mouth disease virus in tissue culture. I. Changes in plaque morphology and antigenicity following passage in tissue culture.** — Arch. ges. Virusforsch. **9,** 411-427. [In English. Authors' summary modified.] **1019**

By passage of the Brussels-O strain of F. & M. virus through tissue cultures, variants were obtained which differed in antigenicity, antigenic character, and rate of neutralization by homologous and probably also heterologous antibodies. Further, a variant forming a different plaque pattern was obtained. An increase in cytopathicity was also observed during passages. The nature of the variance is discussed, and it seems probable that tissue culture selectively favours the virus of the variant type in the heterogenous original population.

Decowski, M., Dzióbkiewicz, H. & Zórawski, C. (1959). Wpływ chinozolu i formaliny na pałeczki Brucella i prątki gruźlicy w szczepionce pryszczycowej I. W. **[Effect of chinosol and formalin on brucella and tubercle bacilli in foot and mouth disease vaccine.]**— Med. Wet., Warszawa **15,** 522-523. [In Polish.] **1020**

0·1% chinosol and 0·5% formalin had a bactericidal effect on brucella and tubercle bacilli in F. & M. disease vaccine kept for 4 weeks at 6° to 8°C.—M. Gitter.

Almejew, C. (1959). Ein Fall von Tollwut bei einem Kamel. **[Rabies in a camel.]**—Dtsch. tierärztl. Wschr. **66,** 387-389. [Summary in English.] **1021**

The 4-year-old camel was apparently kept in a Latvian zoo. In addition to Negri bodies in the brain, so-called "rabies nodules" were seen in spinal ganglia and there were triangular haemorrhagic infarcts in the abomasum. It was not known if the camel had been bitten, but it had eaten hay contaminated by a rabid dog. [The author stated that he had found no previous reports of rabies in camels. 11 cases were recorded in Annual Reports of the Sudan Veterinary Service between 1944 and 1953. Silberstein (*V.B.* **29,** 3816) recorded 29 cases in Israel and Chevrier (1959) recorded 14 cases in Morocco.]

—W. K. Dunscombe.

Thiéry, G. (1959). La rage en Afrique occidentale. Ses particularités. Sa contagiosité. **[Rabies in West Africa.]** — Rev. Élev. **12,** 27-42. [Summaries in English and Spanish.] **1022**

A most interesting clinical and technical account of rabies as seen in W. Africa. The paralytic form is the commonest but he mentions "formes frustes" in which the affected animal recovers with a solid immunity; there are also thought to be healthy carriers. Dogs over 2 years old seem less receptive to street virus, bitches are more sensitive than dogs. Cytoplasmic inclusions are found in many sites but in the dog and cat those in the tonsils seem to be definite Negri bodies. Chemical studies of the Negri bodies in the hippocampus have shown the fundamental protein substance to be made up of histones without nucleic acids while the internal vacuoles are rich in ribonucleic acid; no deoxyribonucleic acid was detected.

T. considers that the virus penetrates early to the sympathetic and spinal ganglia, and that there is danger in giving late treatment without hyperimmune serum as well.

—W. K. Dunscombe.

Villa, L. J., Blind, C., Morris, J. F. & Muñiz Vega, A. E. (1959). Aislamiento de virus rábico de zorros en la República Argentina. (Comunicación previa.) **[Isolation of rabies virus from foxes in Argentina.]**—Rev. Inst. Ganad. No. 5 pp. 17-18. **1023**

The brains of 42 foxes and 6 weasels were obtained in Argentina. Rabies virus was demonstrated in 2 foxes by inoculation and neutralization tests in mice and g.pigs.

—M.G.G.

Kuwert, E. & Liepenow, W. (1959). Die Stabilität des Tollwutvirus bei verschiedenen H-Ionenkonzentrationen, verschiedenen Temperaturen und Formaldehydeinwirkung. **[Effect of pH, temperature and formaldehyde**

on the stability of rabies virus.]—Arch. exp. VetMed. **13,** 335-344. **1024**

The authors used fixed virus (Pitman-Moore strain) in Britton-Robinson universal buffer and tested its stability at (i) pH from 3 to 10 for periods from 30 min. to 24 hours; (ii) at temperatures of 4°, 18°, 37°, and 56°C.; (iii) at concentrations of 0·93, 0·46, and 0·23% formaldehyde. The results were as follows:— (i) The virus was inactivated at pH 3 and 3·5 within 30 min. but between pH 5 and 10 was still active after 24 hours. It is more stable in alkaline than acid pH but after 34 days at pH 9 and 4°C. it was all inactive. (ii) stability fell rapidly with increase of temp.; even at pH 7 (optimum) the virus was 100% inactivated after 5 hours at 56°; (iii) the virus was inactivated after 2 hours in all dilutions of formaldehyde. It is emphasized that even though 99% inactivation occurs rapidly, complete inactivation does not occur for as long as 105 days at pH 7 and 4°, but since the virus is inactivated at very acid pH it is unlikely to cause the disease by ingestion; it is markedly thermolabile. The authors used 2% formalin in P.M. examinations on rabid animals. Glassware after use in rabies work should be left in 2% formalin for at least 2 hours. All virus suspensions for the preparation of vaccine or comparative titrations should be at pH 7 and kept for not longer than 48 hours even at 4°C.

—W. K. Dunscombe.

Torrado, J. M. G. & de Crescini, A. M. G. (1959). Contribución al estudio inmunológico comparado entre los virus fijos de rabia Pasteur y paresiante. **[Immunological relationships between Pasteur's fixed rabies virus and that from paralytic rabies in herbivores.]** —Rev. Inst. Ganad. No. 5 pp. 7-15. [Summaries in English and French.] **1025**

Vaccines of high potency prepared from Pasteur's fixed virus and the virus of paralytic rabies in herbivores protected mice equally well against both strains, but vaccines of low potency gave only a tenth of the protection against the heterologous strain. Serum neutralization tests showed no differences between the strains. It is concluded that vaccines should be prepared from the strain against which protection is required.—M.G.G.

Plowright, W. & Ferris, R. D. (1959). **Ether sensitivity of some mammalian pox viruses.**— Virology **7,** 357-358. **1026**

The four viral agents tested for ether sensitivity were those of sheep pox, lumpy skin disease, contagious pustular dermatitis, and bovine papular stomatitis. Anaesthetic grade ether was used, 20% ether in undiluted virus–ether mixtures. After 18–24 hours at 4° the ether was allowed to evaporate. Sheep pox and lumpy skin disease viruses were as sensitive as myxoma virus, and the high ether sensitive group showed both closely similar cytopathic effects and antigenic relationships.

—W. K. Dunscombe.

I. Mayr, A. (1959). Experimentelle Untersuchungen über das Virus der originären Schweinepocken. **[Experimental studies on Shope's swine pox virus.]**—Arch. ges. Virusforsch. **9,** 156-192. **1027**

II. Reczko, E. (1959). Elektronenmikroskopische Untersuchung der mit originären Schweinepocken infizierten Bauchhaut des Ferkels. **[Electron microscopy of skin from piglets infected with Shope's swine pox virus.]**—Ibid. 193-213. **1028**

I. The virus of swine pox was compared with those of vaccinia, variola, cow pox and fowl pox with regard to pathogenicity for piglets (by cutaneous or intravenous inoculation), formation of specific haemagglutinins and precipitins in pigs, host range, and cross-immunity tests by the gel diffusion method. Swine pox virus caused lesions when inoculated into the chorioallantoic membrane of chick embryos, but it was impossible to passage the virus this way. It grew less readily than vaccinia virus in cultures of kidney cells from various species of animal, and it destroyed the cells. Attempts to passage swine pox virus from one culture to another did not always succeed. In general, sera from infected pigs precipitated with swine pox antigen but not vaccinia, cow pox, variola or fowl pox antigens; but the existence of a common antigen described by Datt & Orlans [*V.B.* **28,** 2470] was confirmed. Although pox could be caused in pigs by vaccinia virus as well as by Shope's virus, M. suggested that Shope's swine pox virus should be treated as an independent member of the pox group.

II. The electron microscope revealed that the intranuclear inclusions described by Blackmore & Abdussalam [*V.B.* **27,** 2059], which were not seen in cells from pigs infected with vaccinia virus, were areas of low density having a finely fibrillar structure. Crystalline structures about 800 mμ long were seen in cytoplasm particularly in the early stages of infection, but their significance was not known.

Several features of the morphology of infected cells were similar to those seen in other pox diseases. [20 photomicrographs.]—R.M.

Hartwigk, H. & Krasselt, M. (1959). Beziehungen zwischen Impfreaktion und Immunität bei Hühnerpocken. **[Relationship between reaction to vaccination and immunity to fowl pox.]**—Mh. Tierheilk. **11,** 227-236. **1029**

Pigeon pox virus vaccine was injected into 10, 8, 5, 4 or 2 follicles on the leg of 28 fowls. Pocks appeared in 157 of 160 treated follicles. Challenge with fowl pox virus by intrafollicular inoculation in the other leg revealed a close correlation between the number of pocks and the degree of immunity. Of 8 birds vaccinated in 10 follicles 7 were immune. There was no relationship between the degree of inflammation of the follicles and immunity. Pigeon pox vaccine that had been stored for 18 days caused transient reactions in only half the follicles inoculated and did not induce immunity, whereas vaccine stored for 4 days induced good reactions and immunity. This method of inoculation is recommended for the evaluation of vaccines from pigeon pox virus.—M.G.G.

Theis, G. A., Billingham, R. E., Silvers, W. K. & Koprowski, H. (1959). **Mechanism of natural resistance of mice to virus infection.** —Virology **8,** 264-265. **1030**

PR1 mice less than 12 hours old were given i/v injections of spleen or bone marrow cell suspensions from adult C_3H mice. Most of those receiving the spleen cells developed "runt" disease while those receiving bone marrow were tolerant even to a skin graft. At 1–2 months all were given West Nile virus i/p. The runts and tolerant mice died. Of a group of tolerant mice given sub-lethal doses i/p of 6-thioguanine, half died after West Nile virus. The authors suggest that natural resistance to viruses can be altered by impaired lymphoid tissue function in the host.

—W. K. Dunscombe.

Sudia, W. D. & Chamberlain, R. W. (1959). **The virus of St. Louis encephalitis in chickens.** — Amer. J. Hyg. **70,** 197-207. [Authors' summary modified.] **1031**

Susceptibility, viraemia and neutralizing antibody studies were conducted on fowls infected by s/c inoculation of the virus or by the bite of infected mosquitoes. Fowls were highly susceptible; their ID_{50} was equivalent to the LD_{50} in intracerebrally inoculated mice.

Chicks inoculated when less than 1 day old responded with the highest and most persistent viraemia; in older birds it was much lower and erratic, but frequently adequate to infect highly susceptible mosquitoes.

All inoculated chicks developed high antibody levels. There was considerable variation between individuals in the time required for peak levels to be reached. Antibody levels were still high after 3 years. Birds given monthly booster injections did not develop higher neutralization indices than those given a single dose. Attempts to demonstrate latent virus in the organs of immune birds were unsuccessful.

Schaaf, K. (1959). **Avian encephalomyelitis immunization with inactivated virus.**—Avian Diseases **3,** 245-256. **1032**

Five avian encephalomyelitis vaccines prepared with varying amounts of virus-infected brain tissue inactivated with beta-propiolactone were administered i/m, alone or with aluminium hydroxide added, to immature fowls. The vaccines were well tolerated and those containing aluminium hydroxide adjuvant induced immunity to intracerebral challenge in at least 80%. The pH of the vaccine (which varied from 4·4 to 7·4) appeared to be of little importance. The best vaccine had a pH 7·4 and contained 6·25% aluminium hydroxide and 12·5% brain tissue, and did not lose its effectiveness after storage at 4°C. for 14 months.—A. Ackroyd.

Calnek, B. W. & Jehnich, H. (1959). **Studies on avian encephalomyelitis. II. Immune responses to vaccination procedures.**—Avian Diseases **3,** 226-239. **1033**

When vaccine prepared from virulent avian encephalomyelitis virus was given to chicks (6½–8 weeks old) by spray, oral, wing web, or intramuscular routes, signs of infection were observed in up to 40%, except after oral administration. Dosage did not greatly influence pathogenicity. The immune response, determined by the serum neutralization test and by intracerebral challenge, depended on dosage. Consistently good serological responses and complete resistance to challenge followed wing web and intramuscular inoculation of 1,000 or more EID_{50} (embryo infective doses). Oral administration required a million or more EID for an adequate response.

—A. Ackroyd.

Rauscher, W. (1959). Seuchenkarte Bayerns der Bornaschen Krankheit der Jahre 1949-1958 und Beurteilung des Wertes der

Schutzimpfung mit Borna-Vakzine nach Zwick. **[Incidence of Borna disease in Bavaria during 1949-1958, and value of vaccination.]**—Mh. Tierheilk. **11,** 221-227. **1034**

The incidence of Borna disease in horses in Bavaria rose from 0·05% in 1949 to 0·46% in 1951, and fell to 0·05% again in 1958. May was the month with the highest incidence. The variation in regional incidence indicated that soil and climate are influential. In 1952 the disease developed in 0·4% of vaccinated and in 3·1% of unvaccinated horses.—M.G.G.

Thamm, H., Ihlenburg, H. & Seffner, W. (1959). Experimentelle Prüfung der histologischen Diagnose der Bornaschen Krankheit. **[Rabbit inoculation for confirming histological diagnosis of Borna disease in horses.]**—Arch. exp. VetMed. **13,** 449-456. **1035**

Brain material from horses was stored for 2–6 days at −12°C., then thawed, suspended in phosphate buffer, and treated with antibiotics for 2–4 hours before intracerebral injection and passage in rabbits. Results of rabbit inoculation agreed with a negative histological finding for Borna disease in all of 134 horses, and with a positive diagnosis in 17 of 18 horses (the brain material from one was decomposed) but not in 4 horses that had recovered from the disease and were slaughtered on account of blindness or ataxia. —M.G.G.

Bartha, A. & Vizy, L. (1959). **Preparation of the complement-fixing antigen of equine influenza virus.**—Acta vet. Acad. Sci. hung. **9,** 429-431. [In English.] **1036**

An account in English of work previously abstracted [*V.B.* **29,** 2095].—R.M.

Bartha, A., Fehér, D. & Palyusik, M. (1959). **An attempt to impart immunity against catarrhal equine influenza by means of the live virus.** — Acta vet. Acad. Sci. hung. **9,** 355-359. [In English.] **1037**

An account in English of work previously abstracted [*V.B.* **29,** 2096].—R.M.

Wünsche, H.-G. (1959). Ein Beitrag zur Therapie der Pferdegrippe bei Vollblutfohlen. **[Treatment of influenza in foals.]** — Mh. VetMed. **14,** 249-252. **1038**

In an estate with 26 foals, 2 were extremely ill and 16 moderately ill when first seen. All others contracted the disease to some degree except one 10-day-old foal which remained healthy. One of the very sick foals died. Of the others, 6 had to be treated. All were kept indoors for 1½–2½ weeks and temperatures recorded twice daily. Hygienic measures were stressed, also the necessity of ascertaining the secondary organisms involved and their possible resistance to antibiotics.

Penicillin alone was ineffective. In most cases the following treatment proved effective in 4 days: streptomycin 1 g. morning and evening; twice daily 800,000 i.u. sodium penicillin by aerosol mask for the more docile patients, the others receiving tetracycline by i/m injection.—Irene M. Grisedale.

Janiakowa, A., Janiak, T. & Koprowski, J. (1959). Zaburzenia w krzepnięciu krwi w niedokrwistości zakaźnej koni. **[Disturbances in coagulation in equine infectious anaemia.]** —Weterynaria, Wroclaw No. 5 pp. 47-58. [In Polish. Summary in German.] **1039**

Examinations of 20 horses, of various ages, affected with equine infectious anaemia, revealed prolonged clotting time before and after re-calcification, fall in the level of prothrombin and prothrombin accelerators, shorter period of fibrinolysis and delayed Jacox reaction.—M. Gitter.

Shimizu, T., Kawakami, Y., Ishitani, R., Ishizaki, R., Aji, T., Sugimura, K., Ishii, S. & Matumoto, M. (1959). Isolement du virus de l'avortement chez la jument sur la culture du tissu rénal du cheval. **[Isolation of the virus of equine abortion in tissue cultures of horse kidney.]**—C. R. Soc. Biol., Paris **153,** 876-879. **1040**

A cytopathic virus was isolated in cultures of trypsinized horse kidney cells from 2 aborted foals in Japan. Eosinophilic inclusions of cell nuclei were seen in the liver and spleen of the foals and in the tissue cultures. The virus underwent serial passage in cultures of rabbit, goat and pig kidney cells, but did not multiply in hamster kidney nor in chick embryo cells, nor in 4 to 5-days old hamsters inoculated i/p. In neutralization and c.f. tests it was identical to equine abortion virus. —M.G.G.

Semerdzhiev, B. (1958). **[Susceptibility of guinea-pigs to equine abortion virus.]**—Izv. vet. Inst. po Virusologiya, Sofia **1,** 103-115. [In Bulgarian. Summaries in English and Russian.] **1041**

The virus was passaged by i/p inj. in new-born g.pigs that had been given cortisone to lower their resistance to infection. After 28 passages its virulence increased sufficiently to kill pregnant g.pigs.—R.M.

Uppal, D. R., Sinha, K. C. & Seetharaman, C. (1959). **Comparative susceptibility of hill cattle and buffaloe-calves to virulent rinderpest virus.**—Indian vet. J. **36,** 49-55. **1042**

The authors adopted a system of notation for mortality and for judging the severity of clinical manifestation in animals used in inoculation tests for standardizing rinderpest vaccine, and observed that the average reaction in 59 buffalo calves, 1–1½ years old, was only slightly less severe than that in 47 hill bulls, 3–6 years old. Accordingly, they recommended that where hill bulls, noted for their high susceptibility, were not available, buffalo calves in good condition could be used for standardizing the vaccine.—R. N. Mohan.

Brown, R. D. & Scott, G. R. (1959). **A screening procedure for the detection of rinderpest-immune cattle.**—Bull. epiz. Dis. Afr. **7,** 169-171. [Summary in French.] **1043**

The procedure is based on neutralization of known rinderpest virus by the unknown serum. Pooled serum from 3 cattle is inactivated at 56°C. for 30 min. To 1 ml. of inactivated serum 1 ml. of suspension of lapinized rinderpest virus is added and the mixture is kept at 37°C. for 1 hour. A rabbit is then inoculated i/v with 1 ml. of the mixture (=100 rabbit lethal doses) and killed 5 days later. Presence of typical lesions indicates that neutralization has not occurred and that the animals are therefore susceptible. If lesions are absent the sera are re-tested separately, the results of the second test being accepted as an indication of the immune status. —T.E.G.R.

Plowright, W. (1959). **Studies with rinderpest virus in monolayer tissue cultures.** — Proc. XVIth Int. vet. Congr., Madrid **2,** 451-452. **1044**

Culture of rinderpest virus was successful in monolayer cultures of calf kidney and testis, a characteristic cytopathogenic effect being produced, while culture passaged virus was cytopathogenic for kidney cells of 4 different animal species. For the first 10 bovine kidney passages virulence for cattle was increased but between the 16th and 21st passages considerably reduced pathogenicity was found with no overt clinical signs, though cattle were immune on challenge, protection being established 3–5 days after inj. of $10^{2.9}$ to $10^{4.5}$ tissue cytopathogenic doses. The duration of immunity is not yet ascertained. The half-life of cultured virus was not more than 4 hours at 37°C., not less than 8·4 days at 4°C., freezing to −25°C. caused a 1 log. 10 fall in titre but no further fall after some months' storage; freeze-drying caused a loss of not less than 90%. Cattle inoculated with virulent virus developed antibodies after the 6th day. Heated adult human sera usually neutralized cultured virus to high dilutions, and measles, distemper and rinderpest may be caused by closely related agents.—W. K. Dunscombe.

Jansen, J. & Kunst, H. (1959). Een stomatitisverwekkend virus bij runderen. [**A virus causing stomatitis in cattle.**] — Tijdschr. Diergeneesk. **84,** 947-957. [In Dutch. Summaries in English, French and German.] **1045**

The papular stomatitis previously described [*V.B.* **26,** 947] was reproduced in calves by scarification of the tongue with a suspension of infected tongue epithelium (there is a colour plate showing lesions produced). The virus was passaged 7 times in calves by tongue scarification with bacteria-free filtrates, some treated with penicillin or streptomycin. Virus freeze-dried with skim milk remained infective for 21 months at −20°C. Attempts to transmit infection to pigs, sheep, goats, fowls, chick embryos, g.pigs and mice failed. Although an inflammatory reaction developed at the site of intradermal inoculation in rabbits, it was not possible to passage the virus. Calves recovered from stomatitis resisted re-infection but their sera did not neutralize the virus. The relationship of the virus to other stomatitis viruses was not studied. —R.M.

Plowright, W. & Ferris, R. D. (1959). **Papular stomatitis of cattle. II. Reproduction of the disease with culture-passaged virus.** — Vet. Rec. **71,** 828-832. [Authors' summary modified.] **1046**

Four culture isolates from bovine papular stomatitis all produced typical primary and secondary lesions in the mouth and on the muzzle of experimentally infected calves. The incubation period was 2 to 4 days, the lesions healing, without scar-formation, in about 4 to 6 weeks. No systemic signs were seen in any inoculated calf but two had small crusted lesions of the skin of the face. Virus was readily recovered in culture from lesion material collected 13 and 16 days after inoculation. The new isolates were identified by their cytopathogenicity. Calves recovered from infection with one strain showed no reaction on re-inoculation with any of the other three and it is probable that all were antigenically

the same or very closely related. Virus-neutralizing antibody was not demonstrable in the sera of the great majority of recovered calves. These results are briefly compared with those of German workers who investigated a clinically identical disease.

Palotay, J. L. & Christensen, N. R. (1959). **Bovine respiratory infections. I. Psittacosis-lymphogranuloma venereum group of viruses as etiological agents.** — J. Amer. vet. med. Ass. **134**, 222-230. **1047**

Experimental calves were inoculated intratracheally with crude bacteria-free suspensions of lung material from calves that had died from acute respiratory disease (one diagnosed as shipping fever), and with two viral agents of the psittacosis-lymphogranuloma group (one isolated from the spleen of a calf showing lesions of sporadic bovine encephalomyelitis and the other from the faeces of healthy cattle), alone or in combination with *Pasteurella haemolytica*. The calves had a rise in temperature, clinical signs of respiratory disease and in one instance, death occurred from bronchopneumonia with gross evidence of purulent meningitis. Apparent immunity to psittacosis - lymphogranuloma agents followed inoculation with either the crude lung suspensions or with the virus of sporadic bovine encephalomyelitis, alone or with *Past. haemolytica*.—A. Ackroyd.

I. Reisinger, R. C., Heddleston, K. L. & Manthei, C. A. (1959). **A myxovirus (SF-4) associated with shipping fever of cattle.**—J. Amer. vet. med. Ass. **135**, 147-152. **1048**

II. Hoerlein, A. B., Mansfield, M. E., Abinanti, F. R. & Huebner, R. J. (1959). **Studies of shipping fever of cattle. I. Para-influenza 3 virus antibodies in feeder calves.**—Ibid. 153-160. **1049**

I. A myxovirus, serologically identical to para-influenza 3 virus isolated from children with respiratory disease, was recovered from the nasal mucus of 2 of a group of 11 calves with shipping fever, and one of a group of 40 calves, in which only one had clinical shipping fever. Four susceptible calves exposed to an aerosol of the virus developed mild shipping fever and the virus was recovered from them 1–9 days after exposure. Haemagglutination inhibition titres against the virus were demonstrated in naturally and experimentally infected calves. It was cytopathogenic in cultures of calf and pig kidney cells and agglutinated g.pig, bovine, human "O" and fowl erythrocytes. There was no cross-neutralization with the virus of infectious bovine rhinotracheitis. Another cytopathogenic virus, not yet classified, was isolated from the nasal mucus of 4 of 16 calves with shipping fever.

II. In 3 years serum samples were obtained from 11 groups of calves a few days after transportation and again 3–7 weeks later. Rises in antibody titres against para-influenza 3 virus were demonstrated in 131 of 191 calves. Although the rises were not always correlated with the development of shipping fever, it appears that this virus may be one of the primary agents.—M.G.G.

Abinanti, F. R. & Huebner, R. J. (1959). **The serological relationships of strains of para-influenza 3 virus isolated from humans and cattle with respiratory disease.**—Virology **8**, 391-394. **1050**

The HA-1 strain of parainfluenza 3 virus isolated from respiratory disease in man and the SF-4 strain from nasal secretions of cattle with "shipping fever" have similar serological and biological characteristics and appear to be strains of the same viral species.—A. Ackroyd.

Gregory, T. S. (1959). **Bluetongue.** — Aust. vet. J. **35**, 156-160. **1051**

In reviewing knowledge of bluetongue G. deals with its epidemiology, the effects of the disease on a susceptible sheep population, methods of reducing economic losses after the introduction of the disease by (a) control of insect vectors *(Culicoides)*, (b) slaughter of affected sheep, and (c) vaccination, and laboratory diagnosis by animal inoculation and serology.

Measures similar to those applied by Australia in the past have failed to protect other countries from the disease. Stricter quarantine measures are now in force in Australia.—N. Wickham.

Enke, K.-H., Liebermann, H. & Schuckmann, B. (1959). Virusabort und Brucella abortus in einem Schafbestand. **[Virus abortion and Brucella abortus infection in a flock of sheep.]**—Mh. VetMed. **14**, 473-475. **1052**

Placentas and foetuses were obtained from a flock in which many of the sheep had aborted. Virus elementary bodies were seen in all of 25 placentas, and *Br. abortus* was isolated in culture from one of 12 foetuses. In serological tests almost all the sheep were positive for ovine abortion virus and one gave a doubtful agglutination reaction for *Br.*

abortus; this was not the one that had yielded the infected foetus. Three of 10 cows on the farm were positive for *Br. abortus*.—M.G.G.

Pattison, I. H., Gordon, W. S. & Millson, G. C. (1959). **Experimental production of scrapie in goats.** — J. comp. Path. **69,** 300-312. **1053**

All of 10 goats inoculated intracerebrally with brain suspension from a Welsh Mountain sheep with scrapie developed the disease within 22 months. No disease developed after similar inoculation of goats with brain suspension from a clinically normal sheep. Subsequent passaging up to 4 times, using brain suspensions from scrapie affected goats, produced scrapie in 42 of 43 goats but in only 8 of 20 South Scotland Cheviot sheep. Clinically scrapie in the goat was slightly different from that seen in sheep. Rubbing against fixed objects was unusual, the tail was invariably cocked over the back and there was a characteristic posture of the hind legs. Histologically large numbers of vacuolated nerve cells were observed in the medulla oblongata of all advanced cases, but only an occasional one was seen in clinically healthy goats.—A. Ackroyd.

Iwasa, S. (1959). **Multiplication of Rift Valley fever virus in human liver cell culture, with special reference to production complement fixing antigen.**—Jap. J. exp. Med. **29,** 323-334. [In English. Author's summary modified.] **1054**

Reproduction of Rift Valley fever virus was studied in Chang's strain of human liver cells with special reference to the complement fixing antigen. The virus produced plaques in a monolayer of liver cells.

The latent period of the virus multiplication was 6 hours and the period of intracellular multiplication was 2·5 hours.

Intracellular c.f. antigen was first detected 5 hours after infection by the indirect fluorescent antibody technique. This coincided with the results of c.f. tests on whole infected culture. Fluorescence was first discernible in the cytoplasm close to the nucleus and increased in intensity and distribution as infection proceeded.

Dunne, H. W., Hokanson, J. F. & Luedke, A. J. (1959). **The pathogenesis of hog cholera. I. Route of entrance of the virus into the animal body.** — Amer. J. vet. Res. **20,** 615-618. **1055**

Dunne, H. W. & Luedke, A. J. (1959). **The pathogenesis of hog cholera. II. The virus eclipse phase and sensitization of the host.**— Ibid. 619-624. **1056**

I. Pigs were infected with swine fever virus through the tonsillar area and the respiratory tract.

II. Virulent swine fever blood virus injected i/v into pigs was present in the blood after 15 min. but not after 30 min.; it was not detected again until after 12 hours. Blood from a pig infected through the tonsillar area was negative at one, 8 and 16 hrs., but positive at 24 hrs. Factors contributing to the lowered defence mechanism of sensitized animals were discussed. In the authors' experiments it appeared that the early stage of virus infection in the cell is characterized by the development of components, probably incomplete virus particles, which are almost completely non-infective. Antibodies against them are incapable of neutralizing virulent virus but the stimulus evoked by these particles causes the host to respond to challenge with virulent virus by developing the severe disease of sensitized animals.—E.V.L.

Semerdzhiev, B., Bonchev, N. & Khristov, S. (1958). **[Do certain unusual hosts of the swine fever virus act as virus-carriers?]**—Izv. vet. Inst. po Virusologiya, Sofia **1,** 69-74. [In Bulgarian. Summaries in English and Russian.] **1057**

Swine fever virus was not detected in the faeces of fowls or the urine and faeces of dogs and rats between 24 and 48 hours after oral administration. It was not recovered for longer than 4 days from earthworms that had ingested soil soaked in infective blood, although the virus remained alive for more than 4 days in soil. It was concluded that these hosts might transmit infection mechanically, but they did not act as reservoirs of infection.—R.M.

Khristov, S. (1958). **[New methods of adapting swine fever virus to rabbits.]**—Izv. vet. Inst. po Virusologiya, Sofia **1,** 37-48. [In Bulgarian. Summaries in English and Russian.] **1058**

The virus was adapted by direct serial passage with the aid of stimulants which reduced resistance and increased reactivity of the rabbit and which assisted survival and reproduction of the virus in the peritoneal cavity and organs. For this purpose K. used erythrocytes or whole blood of pigs, with cortisone, caffeine and glucose added. The

virus had been passaged for up to 134 times and it was claimed that it had become adapted after 2, 3 or 4 passages.—R.M.

Bonchev, N. & Nashkov, D. (1958). **[Purification and concentration of swine fever virus.]** — Izv. vet. Inst. po Virusologiya, Sofia **1,** 193-196. **1059**

The authors studied the chemical and biological properties of virus obtained by adsorption of the supernatant fluid from a suspension of spleen from infected pigs on formolized erythrocytes of rabbits or hens, followed by elution.—R.M.

Khristov, S. (1958). **[Production of crystal-violet vaccine from purified and concentrated swine fever virus.]** — Izv. vet. Inst. po Virusologiya, Sofia **1,** 27-33. [In Bulgarian. Summaries in English and Russian.] **1060**

Virus present in suspension of spleen from infected pigs was purified and concentrated by adsorption on either colloidal gypsum (calcium sulphate) or potassium urate. Adsorbed virus was separated from tissue fragments by centrifugation. Vaccine was prepared by adding glycerol, crystal violet, penicillin and streptomycin to the centrifuged deposit. The spleen of one pig of body wt. 40–60 kg. provided 20–25 doses of vaccine. —R.M.

Lott, A. & Kilian, K. (1959). Erfahrungen über die Simultanimpfung mit lapinisiertem Virus und Immunserum bei der Bekämpfung der Schweinepest. **[Experiences with simultaneous inoculation of lapinized swine fever virus and immune serum.]**—Mh. Tierheilk. **11,** 175-184. **1061**

In 17 months 2,767 pigs on 2 farms were inoculated s/c with lapinized swine fever virus and immune serum simultaneously. Healthy pigs tolerated the inoculation well on the whole and developed good immunity, but 5% of newly purchased animals, 10–15% of which had chronic virus pneumonia, died about 10 days later, most from swine fever and a few from erysipelas and virus pneumonia. Many were infected with *Salmonella choleraesuis* var. *kunzendorf*. It is concluded that this method of immunization is suitable for healthy pigs from disease-free herds.—M.G.G.

Pinkiewicz, E. & Rubaj, B. (1959). Badania nad zachowaniem się witaminy C w nadnerczach oraz elektrolitów i glukozy we krwi przy pomorze świń. **[Vitamin C content of the adrenal glands and electrolytes and glucose in the peripheral blood of pigs with swine fever.]**—Med. Wet., Warszawa **15,** 498-504. [In Polish. Summaries in English and Russian.] **1062**

Investigations on 12 healthy and 39 infected pigs revealed that in acute swine fever the level of vitamin C fell in the zona reticularis and inner part of the zona fasciculata of the adrenal cortex, while in the peripheral blood the level of potassium rose and that of calcium fell. The levels of glucose and sodium remained unchanged and there was no relationship between the level of vitamin C in the adrenals and potassium in the peripheral blood.—M. Gitter.

Rauch, H. (1959). Untersuchungen des Liquor cerebrospinalis bei Spontanfällen der Schweinepest und Teschener Krankheit. **[Studies on cerebrospinal fluid in spontaneous swine fever and Teschen disease.]**—Arch. exp. VetMed. **13,** 430-448. **1063**

In swine fever with nervous symptoms and in Teschen disease the cerebrospinal fluid, obtained by suboccipital puncture, regularly showed an increase in the number of cells and a two to fourfold rise in the total protein content. In both diseases the severity of the clin. symptoms corresponded with the degree of pleocytosis. Qualitative analysis of the protein content and the colloid gold reaction were of only limited value. Sugar and chloride content were not affected.—M.G.G.

Rockborn, G. (1959). **An attenuated strain of canine distemper virus in tissue culture.** — Nature, Lond. **184,** Suppl. No. 11 p. 822. **1064**

A strain of canine distemper virus that underwent 56 passages in dog kidney culture immunized ferrets against challenge with virulent virus.—M.G.G.

Heck, J. H., Vogel, F. & de Haan, W. (1959). Enkele gecontroleerde proeven betreffende de toepassing van levend, avirulent hondeziektevirusvaccin onder praktijkomstandigheden. **[Trials with live, avirulent canine distemper virus vaccine under the conditions of practice.]** — Tijdschr. Diergeneesk. **84,** 958-966. [In Dutch. Summaries in English and Spanish.] **1065**

A total of 348 dogs in 3 Dutch towns were inoculated with egg-adapted distemper virus. 28 developed distemper within 3 weeks of inoculation, before immunity was established. Apparent breakdown of immunity occurred in 2 dogs 6 months after inoculation and in another after a year : all 3 recovered.—R.M.

Veilleux, R. (1959). Le syndrome myoclonique post-encéphalo-leuco-poliomyelitique chez le chien. Deuxième partie. **[Myoclonia (chorea) in dogs, a sequel to distemper encephalomyelitis.]**—Canad. J. comp. Med. **23,** 116-121. [In French. Summary in English.] **1066**

The myoclonic syndrome or "chorea" of dog distemper and canine virus hepatitis is an irreversible phenomenon. Studies on sections of medulla appeared to confirm the theory outlined by other workers that the medulla is the origin of myoclonic contraction. Since myelin destruction is an important factor in the pathology of these two diseases, it is believed that this might be the key to the myoclonic syndrome which in the past has not been dissociated from the clinical paralysis that now appears to develop from a different portion of the spinal cord.—R. V. L. Walker.

Goret, P., Fontaine, J., Mackowiak, C., Pilet, C. & Camara, T. (1959). Neutralisation du virus de la maladie de Carré par le sérum contre la peste bovine. **[Neutralization of dog distemper virus by immune serum against rinderpest.]** — Bull. Acad. vét. Fr. **32,** 287-294. Discussion: pp. 295-296. **1067**

Dog distemper virus was completely neutralized by immune sera against rinderpest in embryonated eggs and in ferrets. The ferrets were susceptible to the virus a month later.—M.G.G.

Adams, J. M., Imagawa, D. T., Wright, S. W. & Tarjan, G. (1959). **Measles immunization with live avian distemper virus.**—Virology **7,** 351-353. **1068**

Three groups each of 200 persons in a mental deficiency institution were given injections of vaccines as follows:— group 1, 1 ml. live avianized distemper; group 2, influenza; group 3, avianized mumps; 1,190 others were controls. 3 years later after a measles epidemic the results showed a threefold reduction of infection in group 1 as compared with the other groups.—W. K. Dunscombe.

Kapsenberg, J. G. (1959). **Relationship of infectious canine hepatitis virus to human adenovirus.** — Proc. Soc. exp. Biol., N.Y. **101,** 611-614. [Author's summary modified.] **1069**

The virus of infectious canine hepatitis was shown to share the 4 main properties of the adenovirus group, including common complement-fixing antigen. Relationship between the disease of the dog and human adenovirus infections is discussed.

Andrewes, C. H., Thompson, H. V. & Mansi, W. (1959). **Myxomatosis: present position and future prospects in Great Britain.**— Nature, Lond. **184,** 1179-1180. **1070**

The history of myxomatosis in Gt. Britain differs from that in Australia. In Australia the virus quickly became attenuated and rabbits developed innate resistance. In Gt. Britain both attenuated and virulent strains persisted and innate resistance did not appear. The reason is the difference in vectors. In Australia mosquitoes spread the virus rapidly, particularly the attenuated strains since their hosts are a source of infection longer. In Gt. Britain the disease is spread slowly by fleas. There may be an interval of several years between outbreaks in a particular area, which does not encourage the development of resistance. Moreover, infected fleas will leave a dead rabbit and spread the lethal virus, but tend to remain on one that survives a mild infection. On the other hand, highly lethal strains will die out for lack of fresh hosts. In Gt. Britain, therefore, selection may favour a virus of unstable virulence.—M.G.G.

Kohlhage, H. (1959). Experimentelle Untersuchungen über das Virus der infektiösen Myxomatose der Kaninchen. I. Mitteilung: Versuche mit einem europäischen Seuchenstamm zur Frage der Reaktivierung von hitzeinaktiviertem Myxomvirus durch Mischinjektion mit aktivem Fibromvirus. **[Studies on the virus of rabbit myxomatosis. I. Attempted reactivation of killed virus by fibroma virus.]** — Mh. Tierheilk. **11,** 258-265. **1071**

Fourteen rabbits were inoculated s/c with a mixture of myxoma virus (of West German origin) that had been inactivated at 60°C. for 10 or 30 min., and of the Boerlage or OA strain of fibroma virus. Fibroma alone developed in all 14 rabbits and only fibroma virus was recovered from them. Failure to confirm the results reported by previous workers [see *V.B.* **6,** p. 715; **7,** p. 605; **28,** 2867] was considered to be due to the lower virulence of European strains of myxoma virus.—M.G.G.

Piraino, F. & Hanson, R. P. (1959). **Isolation of a non-neurotropic line of Newcastle disease virus from a neurotropic parental type.**— Virology **8,** 383-385. **1072**

A strain of virulent Newcastle disease virus was repeatedly added to a suspension of microglial cells obtained from the brains of 10-day-old embryos, and the unabsorbed virus

remaining in the supernate after centrifuging the suspension each time was removed for further adsorption. After 5 such adsorptions the remaining unadsorbed virus was inoculated into 10-day embryos, and the virus recovered from those dying at the LD_{50} dilution. After each series of adsorptions and embryo passage the neuropathogenicity decreased and the embryos survived longer at each passage until a derived strain was obtained which would not produce disease in 5-week-old chickens and conferred immunity to a highly neurotropic form of the virus. The derived virus had a high back-mutation rate of neuropathogenicity.
—W. E. PARISH.

Marek, K. & Raszewska, M. (1959). Doustne uodparnianie kur przeciwko pomorowi rzekomemu ptaków-szczepem F_{107}. **[Oral vaccine F-107 against Newcastle disease.]** — Med. Wet., Warszawa **15,** 341-343. [In Polish. Summaries in English and Russian.] **1073**

180 chicks 3 months old were given vaccine F-107 in drinking water, or in water with milk powder or in sour milk, and challenged 48, 72 and 96 hours later with virulent Newcastle disease virus. The highest immunity (95%) was in the group challenged 96 hours after infection, and pure water proved the best vehicle for the vaccine. In another experiment 880 chicks from immunized hens were given vaccine F-107 in drinking water. H.I. tests 3 and 6 weeks after vaccination revealed positive titres in 70% of the 5 and 6 weeks old birds and in 30% of the younger birds. The authors concluded that better immunity can be established by immunization of older birds after the disappearance of passive, maternal immunity.—M. GITTER.

Gupta, B. R. & Rao, S. B. V. (1959). **A note on the interference phenomenon, as a natural weapon to combat Newcastle disease outbreaks while using Mukteswar virus vaccine.** —Indian vet. J. **36,** 338-341. **1074**

In 6-week-old chicks, immunity to challenge with virulent virus was demonstrated within 72 hours of vaccination, though it took 6–8 days for satisfactory H.I. titres to develop. It was concluded that the protection afforded was the result of interference.
—R. N. MOHAN.

Gagliardi, G. (1959). Studio sulle sedi di moltiplicazione di un ceppo attenuato del virus della pseudo-peste introdotto nell'organismo del pulcino per le usuali vie di vaccinazione. **[Multiplication of Newcastle disease attenuated virus in chicks.]** — Vet. ital. **10,** 773-786. [Summaries in English, French and German.] **1075**

Chicks, with varying degrees of inherited immunity, were inoculated with an attenuated strain of Newcastle disease virus by the oral, conjunctival or nasal routes. Initial multiplication occurred on the mucosa at the portal of entry and spread to the mucosae of other parts of the head. The virus did not consistently spread to all the mucosae; that introduced by the nose and eyes did not reach the lungs.
—T.E.G.R.

Fortner, J., Ulbrich, F. & Lessing, G. (1959). Über den Wert der Schutzimpfung gegen die atypische Hühnerpest (Newcastle Disease). **[Value of immunization against Newcastle disease.]** — Arch. exp. VetMed. **13,** 499-507. **1076**

In 15 trials, 293 fowls were given one or two i/m doses of commercial adsorbed vaccines against Newcastle disease, then placed in contact with diseased birds between 10 days and 18 months later. 166 developed Newcastle disease, of which 71 died. Only 127 remained healthy. Virus was demonstrated in the blood and faeces of symptomless inoculated birds for up to 39 days after infection. Two doses of vaccine, 3–4 weeks apart, gave better protection than a single dose, nevertheless this too was unsatisfactory.
—M.G.G.

Gupta, P. R. & Rao, S. B. V. (1959). **Studies on simultaneous vaccinations against Newcastle disease and fowl pox.**—Indian vet. J. **36,** 365-369. [Authors' summary modified.] **1077**

Simultaneous immunization trials were carried out with freeze-dried fowl pox and Newcastle disease vaccines in 1,016 chickens aged 3–6 weeks. Challenge tests revealed that protection against Newcastle disease was complete and against fowl pox about 90% in the group vaccinated at 6 weeks.

Corbo, L. J. & Cunningham, C. H. (1959). **Hemagglutination by trypsin-modified infectious bronchitis virus.**—Amer. J. vet. Res. **20,** 876-883. **1078**

Haemagglutination was induced by the addition of egg white/trypsin or soya bean/trypsin inhibitor to infectious bronchitis virus modified by trypsin; it was more marked in early passage virus than in fully egg-adapted virus. Trypsin modification caused 98% decrease in embryo infectivity of the

virus. Rate and degree of adsorption varied directly and elution varied indirectly with temp. It is likely that there are 2 haemagglutinin fractions : one closely associated with and the other (greater) distinct from the virus particle. Haemagglutination varied directly with virus concentration and there was direct relationship between optical density and haemagglutination titre of trypsinized virus with egg white/trypsin inhibitor. Haemagglutination was inhibited by negative and anti-infectious bronchitis serum, ovomucoid, and allantoic fluid (normal or virus-infected).—T.E.G.R.

Levine, S. & Sharpless, G. R. (1959). **Plaque formation by lymphomatosis virus.** — Virology **8,** 265-267. **1079**

Plaques were obtained in chick embryo tissue culture after 5 days and their formation was inhibited by treatment of the virus previously described [*V.B.* **28,** 2931] with lymphomatosis immune serum. Plaques can also be obtained on chick embryo liver monolayers.—W. K. Dunscombe.

See also absts. **978** (bacteriophage typing of brucella); **1266** (report, Australia); **1267** (report, New Zealand); **1269** (report, Nigeria); **1270** (report, Northern Rhodesia); **1271** (report, Bechuanaland); **1273** (report, Belgian Congo).

IMMUNITY

Spärck, J. V. (1959). **Antibody production by homotransplanted cells in the neonatal recipient.**—Acta path. microbiol. scand. **46,** 206-216. [In English.] **1080**

In two experiments, spleen cells obtained from adult rabbits at various times after a single injection of a bacterial antigen were transplanted into 5-day-old rabbits. The longer the interval between immunization of the donor and transplantation of the spleen cells, the shorter the period before antibodies appeared in the serum of the recipient, but antibodies were only produced in the recipient if the cells were removed from the donor during a certain critical period, *i.e.,* 48–96 hours after injection. No correlation was found between the effect of the material injected into the recipient and the serum titre of the donor.—W. E. Parish.

Sercarz, E. & Coons, A. H. (1959). **Specific inhibition of antibody formation during immunological paralysis and unresponsiveness.** — Nature, Lond. **184,** Suppl. No. 14 pp. 1080-1082. **1081**

Mice were inoculated daily with 0·5 mg./g. of bovine serum albumin or pneumococcal polysaccharide Type II. After treatment ceased no cells containing antibody were found in the spleen. Inhibition of the response to bovine serum albumin did not interfere with concurrent formation of antibody against diphtheria toxoid. It was concluded that the "immunological paralysis" induced by large doses of antigen is due to inhibition of antibody formation and not to continuous neutralization of antibody.—M.G.G.

Schwartz, R. & Dameshek, W. (1959). **Drug-induced immunological tolerance.** — Nature, Lond. **183,** 1682-1683. **1082**

Adult rabbits given a course of daily injections of 6-mercaptopurine following a single i/v inj. of iodine-labelled human serum albumin developed no immune response to the antigen as found in controls receiving the antigen but no drug. Neither did the test animals develop an immune response to two further single injections of the antigen a month apart although no further drug treatment was given, yet they responded similarly to the controls to two injections of bovine gamma globulin when the injections were made after the cessation of drug treatment.

It is suggested that 6-mercaptopurine is an antimetabolite impairing the "information storing device" of the body, and heterologous antigen injected at the same time is dealt with in a similar manner to autologous substances. —W. E. Parish.

Balfour, W. E. & Comline, R. S. (1959). **The specificity of the intestinal absorption of large molecules by the new-born calf.**—J. Physiol. **148,** No. 2 pp. 77P-78P of Proceedings. **1083**

Ox and human serum albumin were introduced in 2% solutions into the duodenum of male Jersey calves, under sodium pentobarbitone anaesthesia. The albumin appeared in the thoracic duct lymph; at the end of the experiment it was present in the peripheral blood at concentrations as high as 50% of that in the lymph. This contrasts with the results with gamma-globulin with which only small amounts reached the peripheral blood under similar conditions.

The results suggest that many types of molecule may enter the epithelial cells from the lumen of the small intestine of the newborn calf. If they are discharged from the distal or lacteal side of the cell, the larger

molecules such as gamma-globulins can be recovered almost entirely from the lymph. On the other hand the smaller molecules such as albumin may enter the blood vascular as well as the lymphatic capillaries and therefore appear in the blood even after cannulation of the thoracic duct.—R.M.

Dixon, F. J., Kuhns, W., Weigle, W. O. & Taylor, P. (1959). **The lack of absorption of ingested bovine antibody in humans.**—J. Immunol. **83**, 437-441. **1084**

Absorption by the new-born or adult human gastro-intestinal tract of bovine antibodies (diphtheria antitoxin) present in milk or serum was virtually non-existent.—R.M.

Rice, C. E. (1959). **Complement-fixation tests of multiple antigen-antibody systems. I. Difficulties in the interpretation of diagnostic tests. II. The effect of variation in the relative proportions of antigens and antibodies in serum titrations.**—Canad. J. comp. Med. **23**, 112-115 & 163-171. [Summaries in French.] **1085**

I. Difficulties in the interpretation of complement-fixation tests for diagnostic purposes are considered as dependent on the antigenic complexity of the bacterial and viral agents and the variety of antibodies in the hosts. The importance of the standardization of reagents, selection of antigen preparations and antisera designed for detection is explained and some of the criteria for evaluation of such tests are outlined briefly.

II. To illustrate the effect of differences in the relative proportions of antigen and antibody on the results of antibody titrations by two commonly used c.f. methods two sets of experimental systems were studied: mixtures of bovine and chicken serum globulins and their corresponding antisera representing the protein-antiprotein system and mixtures of two or three pneumococcal type-specific carbohydrates and homologous rabbit antisera representing the carbohydrate - anticarbohydrate system. Two important points were demonstrated: (1) in antisera containing two different kinds of antibody in widely variant proportions, the titre estimate may be based entirely on that of the more concentrated of these antibodies, and (2) antigens used in the titrations of such antisera must contain the respective homologous antigens not only in sufficient quantity but also in proper proportions.—R. V. L. Walker.

See also abstr. **941** (therapeutic sera against pneumococcal infection in calves); **949** (allergy in personnel producing tuberculin); **954** (swine erysipelas); **956** (listeriosis); **957** (haemorrhagic septicaemia); **964** (S. dublin infection in calves); **967-972** (brucellosis); **1016-1020** (F. & M. disease); **1024-1025** (rabies); **1029** (fowl pox); **1032-1033** (avian encephalomyelitis); **1034** (Borna disease); **1036-1037** (equine influenza); **1042-1044** (rinderpest); **1058-1061** (swine fever); **1064-1068** (distemper); **1073-1077** (Newcastle disease); **1274** (book, Coombs test); **1275** (book, properdin).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

Anthony, D. W. (1959). **Tests with DDT, lindane and malathion for control of the long-nosed cattle louse Linognathus vituli (L.).**—J. econ. Ent. **52**, 782-784. **1086**

0·025% and 0·035% lindane sprays (3–4 quarts per animal) failed to control lice satisfactorily on calves from Virginia which had been similarly treated some months previously. Resistance was suspected and calves were sprayed once at the rate of 4–5 quarts per animal, 40–50 lb./sq. in. pressure, with 0·075% lindane, 0·5% DDT or 0·5% malathion.

DDT and lindane gave excellent control for 7 days, but infestation was again high after 30 days. Malathion gave excellent control for at least 30 days.

Tests showed that lice on the Virginian calves were twice as resistant to DDT as lice from untreated calves in Maryland. There was some resistance to lindane but none to malathion. This is the first demonstration of insecticide resistance in lice.—W. N. Beesley.

Rodriguez, J. L. & Riehl, L. A. (1959). **Malathion dust for the control of lice on domestic game birds.**—J. econ. Ent. **52**, 774-775. **1087**

Six species of game birds were heavily infested with wing lice *(Lipeurus)* and body lice *(Goniocotes* and *Goniodes).* 1% malathion dust was sprinkled in the natural dust wallows in the bird pens, each wallow receiving about 1 lb. of dust. The lice disappeared within 7 days of treatment and control lasted for at least 90 days. There was no evidence of toxicity and egg production was unaffected.—W. N. Beesley.

Wood, J. C., Malone, C. L., Sparrow, W. B., Brown, P. R. M. (1959). **The treatment of warble infestation.**—Vet. Rec. **71**, 666. **1088**

Field trials with Bayer 21/199(Co-Ral, Asuntol) were conducted over three seasons. 90% control of warbles followed scrubbing the back of each animal with 1 litre of 2% emulsion; cattle were treated once only

between November and January. There were no toxic effects and no apparent difference in warble control with the different treatment times.

Good warble control, but some toxic effects, followed oral treatment with Bayer L 13/59 (Neguvon, Dipterex) at the rate of 80 mg./kg. body wt. Skin treatment in February with 400 ml. 2% Neguvon per animal gave very good results. Treatment in April killed all the warbles present and largely prevented further larval development.

—W. N. Beesley.

Graham, O. H. (1959). **Cattle grub control with systemic insecticides.**—Sthwest. Vet. **12,** 277-280. **1089**

Ronnel (ET-57) administered orally to cattle was non-toxic at dosages of 100 ± 10 mg./kg. It killed all warble larvae *(Dermatobia hominis)* encysted on the back of the cattle, and its efficiency in preventing development of first instar larvae ranged from 80 to 90%. The residues of the compound remaining in the host's fatty tissues had disappeared after 60 days.

A spray of 0·5% soln. of Bayer 21/199, administered six weeks before the grubs were due to appear, was 90% effective in preventing their emergence. Only small amounts of this compound are stored, and they are rapidly eliminated.—B. M. Wilson.

Drummond, R. O. (1959). **Tests with dimethoate for systemic control of cattle grubs.**—J. econ. Ent. **52,** 1004-1006. [Author's abst. modified.] **1090**

Cattle were treated orally, intramuscularly, or dermally with dimethoate. Oral and i/m dosages ranged from 5 to 20 mg./kg. and the strength of dermal sprays from 0·25 to 1%. From 10% to 96% of warble fly larvae were killed depending on dosage. The higher dosages were toxic to cattle. There did not appear to be an adequate margin between effective and toxic doses.

Neiswander, C. R. (1959). **New fly is annoying cattle in Ohio this year.**—Fm Home Res., Ohio **44,** 51 & 54. **1091**

Musca autumnalis was first taken in North America in 1952 (Nova Scotia), and has since spread through eastern Canada, New York and Ohio. The fly is more troublesome out of doors than in barns; it prefers to feed on the nasal and lachrymal secretions and on saliva. No special insecticidal measures are recommended.—W. N. Beesley.

Parr, H. C. M. (1959). **Stomoxys control in Uganda, East Africa.** — Nature, Lond. **184,** Suppl. No. 11 pp. 829-830. **1092**

In 50 square miles of open acacia woodland, the only breeding place of *S. calcitrans* and *S. nigra* was a cattle yard shaded by trees that was seldom cleaned. Foliage surrounding this yard was sprayed with 4% chlordane miscible oil. In less than 3 months the flies had virtually disappeared from the area, whereas in adjacent areas the fly population remained unchanged.—M.G.G.

Anon. (1959). **Report of the first meeting of the joint FAO/OIE expert panel on tick-borne diseases of livestock, held at London, England, 24-29 November 1958.** pp. 115. Rome: Food & Agriculture Organization of the United Nations. (Meeting Report No. 1958/24). **1093**

The first part of the report records the discussions resulting from the working papers submitted to the meeting, which are summarized in the Appendix. The desirability was expressed of more maps recording the distribution of economically important tick species and of keys to identify the ticks. The merits of different methods of tick control were discussed. Spraying with ixodicide is sufficient for tick control but dipping is necessary for complete eradication. Arsenic is most satisfactory as a control of 3-host ticks, newer ixodicides are more effective against 1-host ticks. Methods of overcoming resistance of ticks to ixodicide and methods and technique used in testing for resistance were discussed.

Notes were read on the importance of wild fauna as hosts of ticks parasitic on domestic animals of Africa and Australia. Recent developments regarding the distribution and vectors of tick-borne diseases were added to Dr. Neitz's table. Suggestion was made that the bandicoot might be suitable for experimental work on theileriasis. Possible methods for carrying out chemotherapeutic trials were outlined. A list of recommendations for the future was drawn up.

—B. M. Wilson.

Whitehead, G. B. (1959). **Pyrethrum resistance conferred by resistance to DDT in the blue tick.**—Nature, Lond. **184,** Suppl. No. 6 pp. 378-379. **1094**

W. investigated insecticide resistance in *Boophilus decoloratus* by an immersion method; one strain of larval ticks tolerated 10% freshly prepared pyrethrum (with 10%

emulsifier). This strain was also resistant to sodium arsenite, BHC-type and DDT-type insecticides. Other strains were resistant to BHC-type or arsensic and BHC-type only, or were not resistant.

Pyrethrum treatment of cattle for tick control has not been practised in South Africa and W. suggests that tick resistance to DDT has conferred cross-resistance to pyrethrum.
—W. N. Beesley.

McGregor, J. K. & Lord, L. H. (1959). **Control of demodectic mange.**—Vet. Med. **54,** 308-310 & 312. **1095**

The efficacy of ronnel (Trolene or Dow ET-57) was studied in 7 dogs. Superimposed staphylococcal infections were treated with penicillin/streptomycin. Ronnel was applied both topically and systemically in different concentrations. Except in one case, results were good. No signs of toxicity were detected.
—Irene M. Grisedale.

Webb, J. E., Jr. & Shepherd, E. L. (1959). **Notes on control of mange mites in laboratory white mice with malathion.** — J. econ. Ent. **52,** 790. **1096**

An outbreak of mange due to *Myocoptes musculinus* and *Myobia musculi* caused 50% mortality in a mouse colony. 0·5–6% lindane (as a 75% powder) or 0·3–6% malathion (as a 25% powder) was mixed with the bedding material in several animal jars, each holding 30 infested mice.

After 7 days all mice in the lindane jars were sick or dead, while those (including sucklings) in the malathion jars were normal and mite free. In a second experiment weekly treatment of bedding with 0·3% malathion gave complete control after 6 weeks. Malathion emulsion gave similar results.
—W. N. Beesley.

See also absts. **951** (moth-borne keratitis in cattle in Uganda); **1036** (cultivation of Tryp. vivax in tsetse fly tissue culture); **1267-1268** (reports, New Zealand).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Rowlands, W. T. (1959). **Liver fluke in Wales.** —Agriculture, Lond. **66,** 170-173. **1097**

In Wales 30%–40% of deaths in sheep in winter are due to liver fluke infestation and necrotic hepatitis. In the winter of 1958/59 about 10% of ewes at risk in Anglesey died from this cause. Farmers do not realize that cattle are hosts of the fluke and make the pasture dangerous for sheep. It is recommended that pasture be dressed with a molluscicide in August and in any other month from July to October that follows two consecutive rainy months; that ewes and cattle be dosed at least once in May or June, ewes again from October onwards, at periods of 3 weeks, till within a month of lambing, and cattle once in November and again in February. It is hoped to establish a service of trained staff that will advise farmers on the location of potential snail habitats.—M.G.G.

Enigk, K. & Düwel, D. (1959). Zur Häufigkeit der pränatalen Infektion mit Fasciola hepatica beim Rinde. [**Incidence of prenatal liver fluke infection in cattle.**] — Berl. Münch. tierärztl. Wschr. **72,** 362-363. [Summary in English.] **1098**

Of 661 calves aged up to 12 weeks, 51, including one only 4 days old, excreted *Fasciola hepatica* ova. Considerable numbers were excreted by some calves. Prenatal infection is considered certain in those up to 9 weeks of age and probable in the remainder.
—M.G.G.

Parry, J. A. (1959). **Intramuscular carbon tetrachloride in the treatment of acute fascioliasis in sheep.**—Vet. Rec. **71,** 536-537. **1099**

12 lambs with acute fascioliasis were cured after receiving 4 ml. of a 50% carbon tetrachloride and liquid paraffin mixture by i/m injection. In all flocks so treated deaths ceased 12 hours after treatment. Immediately after injection the animals show a transient lameness and a tendency to lie down when they should be left undisturbed for half an hour. In extensive and severe outbreaks the injection should be repeated after 21 days.
—B. M. Wilson.

Yakovenko, P. F. (1959). [**Intramuscular carbon tetrachloride for fascioliasis in sheep.**] — Veterinariya, Moscow **36,** No. 9 p. 33. [In Russian.] **1100**

After a preliminary trial had shown that 3 ml. CCl_4 (2 ml. for young sheep) in soft paraffin or fish oil did not kill all liver flukes, the dose was increased to 3 ml. for young sheep (weighing about 20 kg.) and 4–4·5 ml. for adults (45–60 kg.), with satisfactory results.—R.M.

Lienert, E. (1959). Auf welchem Wege gelangt Tetrachlorkohlenstoff im Wirtstier zum Leberegel? **[How does carbon tetrachloride reach the liver fluke?]** — Wien. tierärztl. Mschr. **46,** 629-635. [Summaries in English, French and Italian.] **1101**

81% of *Fasciola hepatica* implanted s/c in the lumbar region of 15 rats were dead 5 days after the rats received an oral dose of 1 ml. CCl_4 per kg. body wt. In 15 untreated rats only 31% were dead. It is concluded that the drug is absorbed by the flukes from the blood, not the bile.—M.G.G.

Federmann, M. (1959). Die Behandlung des Leberegelbefalles bei Schafen und Rindern mit Bilevon. **[Treatment of fascioliasis in sheep and cattle with hexachlorophene.]** — Dtsch. tierärztl. Wschr. **66,** 526-529. [Summary in English.] **1102**

Hexachlorophene was given by mouth to 1,011 sheep and 35 cattle infested with liver fluke, at a dosage of 10–20 mg./kg. body wt. The author confirmed Dorsman's findings [*V.B.* **29,** 1112] on the efficacy of this treatment. A dosage of 40 mg./kg. led to the death of one of 15 treated cattle. A small experiment indicated that the drug was also active against *Moniezia* in lambs.—R.M.

Salutini, E. (1959). Il comportamento della chetonemia in bovine affette da parassitosi epatiche. **[Ketone bodies in the blood of cattle with parasitic liver diseases.]** — Ann. Fac. Med. vet. Pisa **11,** 209-218. [Summaries in English and French.] **1103**

An increase in blood ketones was observed in cattle with fasciola, but not in those with echinococcus.—T.E.G.R.

Venkataratnam, A. (1959). **Incidence of nasal schistosomiasis in buffaloes in Andhara Pradesh.**—Indian vet. J. **36,** 250-251. **1104**

The author pointed out the need for investigating the cause of the general absence of lesions and clinical signs of nasal schistosomiasis in buffaloes, as noted by him and some previous observers.—R. N. Mohan.

Alwar, V. S. (1959). **Intensive treatment of nasal schistosomiasis in cattle.**—Indian vet. J. **36,** 56-65. **1105**

Antimony sodium tartrate, in total doses of 6–7 g. per 100 lb. body wt. administered i/v in 4–6 injections during two consecutive days, was well tolerated and cured 7 of 11 affected animals. Smaller doses were less effective, and larger doses were highly toxic.

—R. N. Mohan.

Graber, M. (1959). La cysticercose bovine. Son importance dans les zones sahéliennes d'élevage de la République du Tchad. **[Cysticercosis in cattle in desert areas of the Chad republic.]** — Rev. Élev. **12,** 121-143. [Summaries in English and Spanish.] **1106**

Cysticercus dromedarii was found in 2 of 176 zebu cattle and in wild ruminants and camels in East Chad. The adult form, *Taenia hyaenae,* was harboured by nearly all hyenas examined. The incidence of *C. bovis* in cattle varied from 0·4% to 15%, the highest incidence being in young cattle in West Chad. It was also found in camels and wild ruminants.—M.G.G.

Sgambati, A. (1959). La cisticercosi bovina nelle sue localizzazioni. **[Predilection sites of Cysticercus bovis.]**—Zooprofilassi **14,** 679-687. **1107**

Of 1,905 slaughter cattle (in Benghazi) 269 were affected with *C. bovis.* Data on site incidence are given in detail and compared with those obtained by other authors.

—T.E.G.R.

Mortelli, U. & Gabbanini, P. (1959). Le alterazioni dei linfonodi periportali nella echinococcosi dei bovini e degli ovini. **[Changes in the portal lymph nodes of cattle and sheep infected with echinococcus.]** — Ann. Fac. Med. vet. Pisa **11,** 194-200. [Summaries in English and French.] **1108**

In cattle and sheep with heavy echinococcus infestation the portal lymph nodes presented a chronic inflammatory process characterized by diffuse reticulo-endotheliosis and fibrosis of the sinuses, plasma cell infiltration, hyperplasia and hypertrophy of smooth muscle, atrophy of the follicles and hyaline degeneration of connective tissue.—T.E.G.R.

Lee, R. P. & Shonekan, R. A. O. (1959). **Parenteral administration of anthelmintics.**—Vet. Rec. **71,** 537. **1109**

In critical tests "Neguvon" (Dipterex) was 100% effective against *Trichuris globulosa* in cattle when administered orally at 80 mg./kg. body wt.

Subcutaneous injection of "Neguvon" as a 5% solution in water at doses of 20 mg./kg. body wt. was highly effective against *Haemonchus, Oesophagostomum* and *Trichuris,* 30 mg. being necessary for effective removal of *Bunostomum* and 60 mg. for *Cooperia* species. At this dosage treated animals showed transitory

signs of systemic intoxication. This is the first drug to be effective against *B. phlebotumum* in Nigerian cattle.—B. M. Wilson.

Guilhon, J. & Jolivet, G. (1959). Recherches sur la toxicité et les propriétés anthelminthiques de la dithiazanine. [**Anthelmintic properties and toxicity of dithiazanine.**]—Bull. Acad. vét. Fr. **32,** 413-419. **1110**

Dithiazanine was more active against *Trichuris* than against *Ancylostoma* in 8 dogs given 12–20 mg./kg. daily for 3–7 days in capsule form. All the dogs showed toxic symptoms and one died. Two of 4 pigeons died after receiving a single dose of 200 mg./kg. No effect on their *Ascaridia columbae* and *Capillaria columbae* infestations was seen. A fifth pigeon infested with *C. columbae* was given 20 mg./kg. for 4 days. Faecal examination on the 8th day was negative. In toxicity tests, a daily dose of 30 mg./kg. for 3–5 days was tolerated by a sheep, a pig and a rabbit, but a pig given a single dose of 20 mg./kg. died. Rats tolerated 20 mg./kg. daily in powder form for 4 days, but mice died.
—M.G.G.

Kosminkov, N. E. (1959). [**Incidence of trichinella in superficial muscles of pigs.**]—Veterinariya, Moscow **36,** No. 9 pp. 52-54. [In Russian.] **1111**

The oesophagus contained trichinella in nearly as many instances as the diaphragm and should therefore be examined during meat inspection. Various skeletal muscles contained trichinella in from 53 to 70% of infected pigs.
—R.M.

Norman, L. & Sadum, E. H. (1959). **The use of metabolic antigens in the flocculation tests for the serologic diagnosis of trichinosis.**—J. Parasit. **45,** 485-489. **1112**

Live trichinella larvae were incubated in a culture fluid for 72 hours at 37°C. After incubation the culture fluid was used as a "metabolic" antigen in the flocculation test. The results in infected pigs were no better than those obtained with acid-soluble antigen previously described [*V.B.* **25,** 3712 & **26,** 497] : 76 of 83 sera gave negative tests with "metabolic" antigen.—R.M.

Durie, P. H. (1959). **A new technique for the recovery of infective strongyle larvae from soil and pasture.**—J. Helminth. **33,** 189-196. [Author's summary modified.] **1113**

The technique is based on the difference in density of larvae and debris under the influence of a stream of water flowing upwards at a gradually decreasing rate. Trials with known numbers of larvae gave an average recovery of 74% from pasture, and 78% from soil.

Gibson, T. E. (1960). **Some experiences with small daily doses of phenothiazine as a means of control of strongylid worms in the horse.**—Vet. Rec. **72,** 37-41. [Author's summary modified.] **1114**

The rate of acquisition of strongylid infestation by a foal whose dam received 1-g. daily doses of phenothiazine was compared with that of a foal of an untreated mare. The foal of the treated mare had a lower worm burden than the untreated one but it was found impossible to rear the foal completely free from strongylid worms. An unusual reaction of a horse to treatment with 1-g. daily doses of phenothiazine is described and the possibility is discussed that this reaction resulted from the presence of phenothiazine-resistant worms.

Goldberg, A. (1959). **The relationship of diet to gastrointestinal helminth parasitism in cattle.**—Amer. J. vet. Res. **20,** 806-814. **1115**

The effects of four diets on gastrointestinal parasitism were compared in 4 experiments using 20 steers. In the first three experiments fescue hay was compared with green lucerne hay and in the fourth fresh fescue was compared with grass plus clover. Animals in the test groups were dosed with larvae of *Oesophagostomum radiatum, Cooperia punctata, C. oncophora, Ostertagia ostertagi, Haemonchus contortus,* and *Trichostrongylus axei,* the number given to each varying from one million (including 200,000 *Oes. radiatum*) to 400,000 (including 4,600 *Oes. radiatum*). Data were recorded on appetite, body temperature, condition of the faeces, blood picture, food consumption, weight changes, faecal egg count and P.M. findings including number of worms recovered. Of the controls lucerne fed and legume plus grass fed animals gained 1·1 times as much per lb. of food as those fed fescue. Infected animals showed about the same degree of inappetence on each diet. In animals carrying comparable worm burdens there did not appear to be any effect of the various diets on weight gains. The effect of moderate or heavy parasitism on weight gain was greater than the effect of the diets. In comparable infections clinical signs were similar in severity, irrespective of diet. Faeces of infected animals on the different diets

became abnormal at about the same time to the same degree and remained so for about the same period. Haematocrit values were correlated with degree of parasitism rather than with diet. Animals fed fescue passed 1·8 times as many eggs per g. of faeces as those fed the other diets. In animals killed at comparable intervals after infection, 16% more worms were recovered from the fescue fed group than the other groups. Rate of development of the worms was similar on each diet. Number of intestinal lesions caused by *Oes. radiatum* and number of larvae in the intestinal wall, were similar in all groups. Where cattle of different ages were used, difference in degree and severity of parasitism was correlated with age as well as diet.

—T. E. Gibson.

Forsyth, B. A. (1959). **The effect of purity of phenothiazine on anthelmintic efficiency.**—Aust. vet. J. **35,** 99. **1116**

When the purity of a phenothiazine preparation falls below 70%, anthelmintic efficiency against *Ostertagia* spp., *Trichostrongylus* spp. and *Chabertia ovina* is erratic or very poor. With 85% purity the efficiency of a 15 g. dose was invariably 80%. Little extra efficiency resulted from increasing purity above 85%. It appears that impurities formed during the manufacture of lower grade material may mask the anthelmintic activity. It was confirmed that as particle size decreases, anthelmintic efficiency increases. In the expression of particle size the measurement of specific surface area (sq. cm./g.) is more accurate than describing particle size distribution in terms of percentage finer than some arbitrary figure. A minimum purity of 85% and a specific surface area of 12,000 sq. cm./g. by sedimentation analysis is apparently necessary for high anthelmintic effects.

Analysis for purity was made by a chromatographic method. The method used hitherto was based on estimation of total nitrogen and may be misleading because it also measures impurities.—H. McL. Gordon.

Belle, E. A. (1959). **The effect of microenvironment on the free-living stages of Bunostomum trigonocephalum.** — Canad. J. Zool. **37,** 289-298. [Author's abst.] **1117**

The investigation has shown that temperature and relative humidity are the microenvironmental factors governing the development of free-living stages of *B. trigonocephalum.*

Leland, S. E., Drudge, J. H., Wyant, Z. N., Elam, G. W. & Hutzler, L. B. (1959). **Studies on Trichostrongylus axei (Cobbold, 1879). IV. Some aspects of treatment, pathogenicity, and quantification in experimental infections of a horse strain in calves.**—Amer. J. vet. Res. **20,** 787-794. **1118**

The pathogenicity for calves of a strain of *T. axei* from horses appeared greater than that of other strains. Eleven calves were given varying doses of larvae and the worm recovery varied from 59·9% when 41,000 larvae were administered to 12·3% when 1,500,000 larvae were given. The average prepatent period was 21·3 days and the time between infection and death ranged from 17 to 39 days. The male to female worm ratio averaged 0·77 and the egg-laying potential of the female worm averaged 41·6 eggs per 24 hours.

Body weight of infected calves was greatly reduced and calves receiving the highest dose levels were extremely emaciated. Body fat was almost absent and degeneration of the omental fat was observed. Acute cases were characterized by an extremely hyperaemic abomasal mucosa but in more chronic cases the mucosa of the pyloric region was swollen and puffy with little hyperaemia. Microscopically the abomasum showed a thick layer of cells, cellular debris and necrotic material covering areas of the mucosa, as well as sloughing of the surface epithelium.

In calves receiving more than 500,000 larvae the packed r.b.c. volume rose 3 weeks after infection. In animals which survived longer the value dropped and reached normal range by the eighth week. After this the packed r.b.c. volume was below the pre-infection level. There was a tendency to lymphocytosis from the third week post infection.

Phenothiazine was variable in its action. At a dose rate of 20 g. per 100 lb. body wt. efficiency varied from 50 to 98% but two treatments were required to reach this high level. There was some evidence of a selective action against female worms.—T. E. Gibson.

Bull, P. C. (1959). **A seasonal sex difference in the infestation of rabbits with the nematode Trichostrongylus retortaeformis (Zeder, 1800).**—Nature, Lond. **184,** Suppl. No. 5 pp. 281-282. **1119**

In 1,840 sexually mature rabbits collected in New Zealand, *T. retortaeformis* infestation was heavier in males from March to September and heavier in females from October to February—the middle and end of

the rabbits' breeding season. In males the higher proportion free from infestation between October and December indicated "self cure" as an important factor. In young females infestations were heavier in pregnant than in non-pregnant animals. In immature rabbits sex had little effect on infestation. It is suggested that sex be stated in parasitological studies in wild or lab. animals.—M.G.G.

Baxter, J. T. (1959). **Mixed grazing and nematodirus disease of lambs.**—Vet. Rec. **71,** 820-822 & 823. 1120

Four paddocks (each $\frac{1}{3}$ acre) were each grazed in 1957 by two ewes and four lambs and clinical nematodiriasis was observed in each paddock. In 1958 two of the paddocks were grazed in a similar fashion but the other two each carried one ewe and two lambs. In addition the latter two paddocks were grazed initially by one calf each, but subsequently the two calves were run together grazing each plot in turn. Thus one plot had 22 calf-grazing days and the other 46 calf-grazing days. Disease of varying severity was seen on three of the paddocks; the exception being the paddock having 22 calf-grazing days. The most severe disease was seen on the other calf-grazed paddock. It was demonstrated in another experiment that larvae of *Nematodirus* spp. are concentrated at the base of the herbage and the severe disease in the calf-grazed paddock was attributed to the shortness of the herbage forcing the sheep to graze the most heavily infected part of the sward and also to the large amount of calf faeces on the herbage which restricted the area of short herbage palatable to the sheep. The calves became infected with *Nematodirus* spp. and were therefore a source of herbage contamination for future years. In Northern Ireland the peak of *Nematodirus* larval infestation occurs in mid March and early April; a little earlier than in the north of England. In consequence the prophylatic use of drugs should commence in mid March in Northern Ireland.—T. E. Gibson.

Enigk, K. & Düwel, D. (1959). Die Wirksamkeit von Cyanacethydrazid beim Lungenwurmbefall des Rindes. **[Efficacy of cyanacethydrazide in lungworm infestation of cattle.]**—Dtsch. tierärztl. Wschr. **66,** 379-382. [Summary in English.] 1121

Subcutaneous or oral administration of cyanacethydrazide to 243 cattle infested with lungworm produced little benefit, production of larvae being decreased only for a few days. The grade of infestation can be kept low by pasture hygiene.—F. R. Paulsen.

Mohi-ud-Din, G. (1959). **Preliminary trials with 'Dictycide' (I.C.I.) against lung worm disease in sheep and goats.**—Indian vet. J. **36,** 335-337. 1122

"Dictycide" (cyanacethydrazide) was administered twice, 3 weeks apart, to 63 sheep infested with *Dictyocaulus filaria* and *Protostrongylus rufescens.* During the 4 months following the first dose, 20 of the treated and 13 of the 20 untreated sheep died.

—R. N. Mohan.

Del Lucchese, A. (1959). Sulla organizzazione linfatica in polmone di suino colpito da metastrongilosi. **[Organization of the lymphatic system in lungs of pigs with metastrongylosis.]**—Ann. Fac. Med. vet. Pisa **11,** 239-248. [Summaries in English and French.] 1123

A common finding in pigs with lungworms was the presence of lymph nodes between the visceral layers of the pleura in the medial angle of the dorso-caudal part of the lung. These are considered to be secondary structures, similar to "pseudo-tubercular nodules," formed in the course of infestation.

—T.E.G.R.

Mandelli, G. (1959). Lesioni bronco-polmonari da elminti nei camosci (Rupicapra rupicapra L.) e negli stambecchi (Capra ibex L.) del Parco Nazionale del Gran Paradiso. Reperti anatomoistologici e considerazioni patogenetiche. **[Broncho-pulmonary lesions caused by helminths in chamois and ibex.]**—Clin. vet., Milano **82,** 225-248. [Summary in English.] 1124

Lungworm disease in 9 ibex and 12 chamois in a national park was studied. The parasite most frequently encountered was *Muellerius capillaris.* Gross and microscopic lesions are described. There are 10 photomicrographs.—T.E.G.R.

Del Bono, G., Favati, V. & Emdin, R. (1959). Microascaridiosi sperimentale del suino da Toxocara canis. (Nota preventiva). **[Experimental infestation of pigs with Toxocara canis. (Preliminary note.)]**—Ann. Fac. Med. vet. Pisa **11,** 232-238. [Summaries in English and French.] 1125

Embryonated eggs of *T. canis* were administered by mouth to 2 young pigs. P.M. examination revealed liver lesions similar to those of so-called "multiple parasitic hepatitis

of pigs". In the lungs there were grey miliary lesions under the pleura and foci of catarrhal bronchopneumonia; larvae of *T. canis* were found in these lesions. Infiltration of eosinophilic leucocytes mixed with histio-lymphocytes was observed in the renal cortex.—T.E.G.R.

Pande, P. G. & Krishnamurty, D. (1959). **Inter-relationship between hypovitaminosis A and Ascaridia galli infestation in poultry.**—Poult. Sci. **38,** 13-25. **1126**

Records of mortality on an Indian state poultry farm suggested that there was a relationship between vitamin A deficiency and susceptibility to *A. galli.*

Experiments with birds from the flock suggested that:— (1) Susceptibility to hypovitaminosis A was reduced when *Ascaridia* were eliminated by treatment. The vitamin A reserves of the liver were raised in the absence of parasites. (2) Lesions of vitamin A deficiency developed more rapidly in parasitized birds. (3) Birds maintained on an adequate supply of green food as a source of vitamin A, were resistant to *Ascaridia* and could be kept in reasonable health even when exposed to ground contamination with the ova of *A. galli.*—L. P. Joyner.

Marolt, J. & Vukelić, E. (1959). Cortison in der Therapie der rezidivierenden Widerristschäden (Onchocercosis) beim Pferd. **[Cortisone in the treatment of recurrent sores of the withers in horses.]** — Dtsch. tierärztl. Wschr. **66,** 377-379. [Summary in English.] **1127**

In 30 horses affected with recurrent sores of the withers, the contents were evacuated from the nodules and injections, once or twice with a 7 to 14-day interval, of 125 to 250 mg. of cortisone preparation and procaine penicillin were given. In only two cases was there no success, though five relapses occurred. Symptoms of the condition are described.

—F. R. Paulsen.

Seneviratna, P. (1959). **Studies on Anafilaroides rostratus Gerichter, 1949 in cats. I. The adult and its first stage larvae. II. The life cycle.**—J. Helminth. **33,** 99-108 & 109-122. **1128**

This nematode occurs in peribronchial tissue and the walls of bronchi in cats in Palestine or Ceylon. First-stage larvae developed in the foot of certain molluscs. Cats probably became infected through eating auxiliary hosts, such as fowls and rodents.

—R.M.

See also absts. **1267** (report, New Zealand); **1269** (report, Nigeria).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Gorlin, R. J., Clark, J. J. & Chaudhry, A. P. (1958). **The oral pathology of domesticated animals.**—Oral Surg. **11,** 500-535. **1129**

Mouth lesions and tumours in 90 dogs, 6 cows, 5 cats, a sheep and a horse were classified and described. The commonest malignant neoplasm was melanoma in dogs. There are 40 illustrations.—R.M.

Colosi, A. & Mioli, M. (1959). Contributo allo studio comparativo ed istopatologico dei tumori della cistifellea negli animali domestici. **[Comparative and histopathological study of neoplasms of the gall bladder in domestic animals.]** — Nuova Vet. **35,** 169-175. [Summaries in English and French.] **1130**

An account of cystic adenoma of the gall bladder in 2 cows and a dog.—T.E.G.R.

Lombard, C. (1959). Nouvelle observation de cancer utérin chez la lapine. **[Uterine cancer in rabbits.]**—Bull. Acad. vét. Fr. **32,** 447-451. **1131**

Cylindrical-cell epithelioma of the uterus with pulmonary metastases was found in 3 Angora rabbits aged about 2 years, without previous gestation. A hereditary disposition was suggested.—M.G.G.

Thoonen, J., Hoorens, J. & van Meirhaeghe, E. (1959). Xanthomatose beim Huhn. **[Xanthomatosis in fowls.]**—Arch. Geflügelk. **23,** 314-318. [Summary in English.] **1132**

Xanthomata occurred in 7% of a batch of 450 White Leghorn pullets. Cholesterol content of serum was normal but that of skin and subcutaneous fat was greatly increased. [See also *V.B.* **26,** 1759.]—R.M.

Sykes, J. A., Dmochowski, L. & Russell, W. O. (1959). **Bovine ocular squamous cell carcinoma. III. Tissue culture studies of carcinoma.** — Proc. Soc. exp. Biol., N.Y. **101,** 264-266. [Authors' summary modified.] **1133**

Behaviour and properties of cells derived from bovine ocular squamous-cell carcinoma grown in tissue culture are described. In these cells, unlike those from benign pre-

cursor plaque and papilloma lesions, cytoplasmic inclusions were seldom observed. Multiple nuclei and margination of chromatin were found only in rare instances. Changes, normally associated with cells from cultures of plaque and papilloma, were found in cells from lesions diagnosed as transitional from plaque or papilloma to carcinoma.

Orkin, M. & Schwartzman, R. M. (1959). **Cutaneous tumors: The mast cell and canine mastocytoma.**—Vet. Med. **54,** 315-326. **1134**

This is a detailed report on mastocytes and mastocytoma in the dog. Similar conditions in dog and man are compared. Clinical aspects in the dog are outlined and details given of location, origin, structure, staining and numerous other histological data. Numerous photomicrographs are presented. The authors discussed 100 cases of canine cutaneous tumours from published accounts, and analysed and tabulated 13 of their own cases. They cited laboratory techniques for biopsy, smears etc. They discussed the histological similarity between mastocytoma and Hodgkin's disease and other possibilities of differential diagnosis.

Although surgical treatment is best, adrenal-cortical hormone therapy has been tried.—Irene M. Grisedale.

Tosteson, T. R., Ferguson, S. A. & Davidson, E. (1959). **Further studies of the carcinostatic effect of extracts prepared from cow ovaries.** —Arch. Path. **68,** 232-242. **1135**

Mice inoculated with Ehrlich ascites tumour were treated i/p with aqueous extracts of cow ovaries freed from loosely bound lipids and nucleic acids. Tumour growth was reduced and the number of mice surviving after 30 days increased.—M.G.G.

Carr, J. G. (1959). **A survey of fowl tumours for induction of kidney carcinomas.** — Virology **8,** 269-270. **1136**

In a previous work it was demonstrated that the ES4 virus, which causes erythroleucaemia of fowls, will cause carcinoma of the kidney in very young chicks which survive for over 3 weeks. Of other fowl tumours studied, MH2 (reticulo-endothelioma of Murray & Begg) gave similar results. It was observed that carcinomas occurred only when very young chicks were used and only in those birds which survived for over 3 weeks; they could be transplanted to give large growths of the same morphology. These tumours are considered to be analogous with ES4 renal carcinomas from which they differ morphologically because they are more pleomorphic. A full description of the tumours will be published later.—T.E.G.R.

See also abst. **1079** (plaque formation by lymphomatosis virus).

NUTRITIONAL AND METABOLIC DISORDERS

Noller, C. H., Stillions, M. C., Crowl, B. W., Lundquist, N. S. & Delez, A. L. (1959). **Pasture for young dairy calves.** — J. Dairy Sci. **42,** 1592-1599. **1137**

22 Holstein calves were divided into three groups; barn fed, pasture, and pasture with unrestricted hay. The calves received colostrum for up to two days and then were pail fed with milk up to 49 days. All were given grain three times daily. Hay was available to the first group from 15 days of age, and to the third group from the time they went on pasture. Calves in both pasture groups were put out at 8–14 days of age and the experiment terminated when they were 116 days old. Average daily gain for the three groups up to 60 days of age was about the same. The pasture group consumed 98·4 lb. less grain and the pasture/hay group 107 lb. less grain than the barn-fed group. The coat was smoother in the pasture/hay calves and their faeces firmer than in those not given hay.

A second experiment with 6 Holstein and 4 Guernsey calves gave similar results except that the Guernsey calves did not respond favourably.

The experiments demonstrate the ability of calves to utilize pasture herbage from an early age and pasture-fed calves did as well as barn-fed calves with an average consumption of 102·7 lb. less grain. Consumption of herbage began almost as soon as calves were placed on pasture and rumination occurred much earlier than in barn-fed calves. Calves at pasture have a desire for coarse material which may be supplied as hay or as herbage. They preferred brome grass to lucerne, and ladino clover appeared to be unpalatable. It was noteworthy that all calves in these experiments had negative faecal egg and oocyst counts: the adult and growing animals also had negative faecal egg counts resulting in low pasture larval contamination. Intake of infective helminth larvae by the calves at pasture

must have been minimal and quite different results might have been obtained in the presence of an appreciable worm burden.

—T. E. Gibson.

Dutt, R. H. & Barnhart, C. E. (1959). **Effect of plane of nutrition upon reproductive performance of boars.** — J. Anim. Sci. **18,** 3-13. **1138**

Three groups, each of 3 boars (average age 60 days) were fed 100%, 70% or 50% of the recommended total digestible nutrients intake, for 312 days. Higher nutrition resulted in significantly greater daily live weight gains, fewer days in which to reach puberty and a greater volume of semen. Motility and concentration of spermatozoa, percentage morphologically abnormal cells and fertility did not vary significantly between groups.

—E. J. Castle.

Mangan, J. L., Johns, A. T. & Bailey, R. W. (1959). **Bloat in cattle. XIII. The effect of orally administered penicillin on the fermentation and foaming properties of rumen contents.**—N.Z. J. agric. Res. **2,** 342-354. **1139**

Procaine penicillin (100,000–500,000 units) was introduced through the rumen fistula of one of a pair of identical twin cows, after they had both been fed 35 lb. of cut red clover. The foam expansion and foam strength of rumen contents of the penicillin treated cow were considerably lower than those of the untreated cow, which showed signs of moderate bloat. After the rumen contents had been centrifuged both expansion and strength increased greatly suggesting that a strong anti-foaming agent had been removed which could be the lipid envelope of the plant chloroplasts.

Analysis of rumen contents showed that there was a slowing down of volatile acid and ammonia production in the treated animal and an accumulation of the fermentation intermediates such as reducing sugars, lactic acid and soluble protein. The effect of penicillin on rumen fermentation disappeared after repeated dosing, but after 2 months without treatment the response to penicillin was regained.—E. J. Castle.

Coates, M. E. & Harrison, G. F. (1959). **The effect on chick growth of inactivated penicillin, mineral sulphates or furazolidone supplements.** — Brit. J. Nutr. **13,** 345-355. [Authors' summary modified.] **1140**

When tested in premises where a growth response to penicillin was obtained, inactivated penicillin, D-penicillamine or phenylacetic acid failed to stimulate the growth of chicks. No growth response resulted from the addition of copper sulphate or potassium sulphate to a diet containing a normal or a low level of animal protein, even when the usual supplement of inorganic sulphate was omitted.

Furazolidone stimulated growth to the same extent as did penicillin. When the drugs were given together, the response was greater than either alone, although in this experiment an unusually small response to penicillin was obtained.

Greaves, J. P., Scott, M. G. & Scott, P. P. (1959). **Thyroid changes in cats on a high-protein diet, raw heart.** — J. Physiol. **148,** No. 2 pp. 73P-74P of Proceedings. **1141**

Changes in behaviour and in the skeleton due to Ca deficiency and Ca/P imbalance in kittens fed on raw heart were described on a previous occasion [*V.B.* **29,** 490]. Hyperaemia, hypertrophy and hyperplasia of the thyroids were noted in kittens receiving the diet for 8 weeks or longer, from 10 to 14 weeks of age.—R.M.

I. Leoschke, W. L. & Elvehjem, C. A. (1959). **The importance of arginine and methionine for the growth and fur development of mink fed purified diets.**—J. Nutr. **69,** 147-150. **1142**

II. Leoschke, W. L. & Elvehjem, C. A. (1959). **The thiamine requirement of the mink for growth and fur development.**—Ibid. 211-213. [Authors' summaries modified.] **1143**

I. Arginine and methionine have been shown to be of critical importance for fur production of mink fed purified diets containing casein as the sole source of protein.

II. It has been determined that 120 μg. of thiamine HCl per 100 g. of ration supplies the thiamine requirement of the mink for growth and fur development.

McLean, J. W., Thomson, G. G. & Claxton, J. H. (1959). **Growth responses to selenium in lambs.**—N.Z. vet. J. **7,** 47-52. [Authors' summary modified.] **1144**

In six out of nine groups of lambs (total 730) significant responses in growth rate were obtained to supplements, given every 10 days, of either sodium selenate (1 mg. Se) by mouth or injected s/c, or sodium selenite (0·5 mg. Se) by mouth. Increases in growth rate varied from 12% to about 40%. Response was usually observable within 3 weeks, and continued throughout the trials, the longest of

which was 105 days. The authors discussed these results in relation to white muscle disease and ill-thrift in Canterbury.

Huber, W. G., Waxler, G. L., Moeller, M. W. & Scott, H. M. (1959). **Effect of dietary zinc deficiency of chicken hepatic cells.** — Proc. Soc. exp. Biol., N.Y. **101,** 758-760. [Authors' summary modified.] **1145**

Hepatic cells of chicks fed soya bean protein with no supplemental zinc exhibited nucleoli 78% larger than those in chicks fed the same diet supplemented with 40 p.p.m. of zinc. No other histological changes were observed in sections of heart, spleen, kidney and small intestine.

Ryś, R. (1959). **Iron content in the serum of cows with hypocupraemia.**—Nature, Lond. **183,** 1596-1597. **1146**

The iron content in the serum of cows with hypocupraemia was below normal (average 126 mg.%). Results indicated that iron metabolism was affected by hypocupraemia.—D. S. Papworth.

Behrens, H. & Schulz, L. C. (1959). Swayback (enzootische Ataxie) der Schaflämmer. **[Swayback (enzootic ataxia) in lambs.]**—Dtsch. tierärztl. Wschr. **66,** 502-506 & 529-534. [Summary in English.] **1147**

The occurrence of swayback in Germany was briefly recorded by Cohrs on p. 443 of the 3rd edition of "Lehrbuch der speziellen pathologischen Anatomie" (1949). This present article is the first detailed account from Germany and is based on material from two flocks, both near iron foundries. The condition was prevented by dosing pregnant ewes with copper sulphate soln. Pathological features were described in detail and illustrated. The authors believed that swayback was not a primary demyelination and suggested that it was initiated by a disturbance in the blood-brain barrier, possibly due to anaemia of copper deficiency, which led first to perivenous cerebral oedema then to diffuse oedema necrosis, as described by human pathologists, resulting in cavity formation. Thus swayback had little in common with mutiple sclerosis but was similar to post-vaccinal encephalitis. Contrary to the findings of other authors, lesions were sometimes asymmetrical and primary inflammation was sometimes present. —R.M.

Gonzalez, G., Garcia, J. & Fernandez, E. (1959). **A lesion of the follicle and of the fibre of wool and its possible relation with an excess of iron in the forage.** — Nature, Lond. **184,** Suppl. No. 8. pp. 559-561. **1148**

An account in English of work previously reported [*V.B.* **29,** 3917].—A. Ackroyd.

I. Rose, G. A. (1959). **Symposium on some new approaches to calcium metabolism. The relative importance of the ionized and complexed fractions of calcium in human plasma in control of the urine calcium.** — Proc. R. Soc. Med. **52,** 347-349. **1149**

II. Watson, L. (1959). **Symposium on some new approaches to calcium metabolism. Citrate metabolism in hyperparathyroidism.** —Ibid. 349-351. **1150**

III. Nordin, B. E. C. (1959). **Symposium on some new approaches to calcium metabolism. Investigation of bone metabolism with ^{47}Ca—a preliminary report.**—Ibid. 351-353. **1151**

I. The relative importance in urinary excretion of ionized calcium and that complexed to citrate in human plasma was investigated, as there is often no correlation between plasma and urine calcium levels. Intravenous infusions of calcium chloride to raise the ionized calcium, or sodium citrate to raise the complexed calcium, were given to normal human subjects, raising the level of calcium in the plasma by about 1·5 mg./100 ml. In each case an immediate rise of urinary calcium of about sixfold occurred. This was more sustained in the case of the calcium chloride. Thus a large rise in urine calcium may be due to either the ionized or complexed fractions in the plasma.

II. The plasma citrate levels in 9 out of 12 patients with hyperparathyroidism without bone disease were within normal limits. In eight of these 12, the plasma citrate was found to have fallen when determined about one week after removal of a parathyroid adenoma. Plasma citrate also fell in six control patients after various other operations.

III. The bone accretion rates of seven normal human subjects, as measured with ^{47}Ca averaged 8·9 mg. calcium per kg. body wt. per day and the average for seven patients with primary osteoporosis 12·1 mg. calcium per kg. body wt. per day. There is thus no evidence of a reduced rate of new bone formation in the patients with osteoporosis.

—E. J. Castle.

Andrews, E. D., Hart, L. I. & Stephenson, B. J. (1959). **A comparison of the vitamin B_{12} and cobalt contents of livers from normal lambs, cobalt-dosed lambs, and others with a recent**

history of mild cobalt deficiency disease. — N.Z. J. agric. Res. **2,** 274-282. **1152**

For eight months three groups of 12 lambs were (1) grazed on a cobalt-sufficient pasture, (2) grazed on a cobalt-deficient pasture and dosed at a rate of 7 mg. cobalt per lamb per week, or (3) grazed on a cobalt-deficient pasture. Lambs in group (3) showed evidence of a mild cobalt deficiency during the the first 6 months and then recovered. At the end of the experiment the mean vitamin B_{12} value for liver of lambs was 0·65, 0·58 and 0·31 mg./g. wet tissue, for groups (1), (2) and (3) respectively. Most of the cobalt in the liver of lambs not receiving cobalt was in the form of vitamin B_{12} whereas in group (2) liver cobalt tended to be in some other form.

—E. J. Castle.

Forman, S. A., Whiting, F. & Connell, R. (1959). **Silica urolithiasis in beef cattle. 3. Chemical and physical composition of the uroliths.** — Canad. J. comp. Med. **23,** 157-162. [Summary in French.] **1153**

Urinary calculi from steers on feeding trials in Western Canada were examined by various laboratory procedures. Opaline silica was generally the principal constituent with varying amounts of calcium oxalate di-hydrate but diets with a high lucerne content appeared to favour the presence of considerable calcium carbonate. It is postulated that silica urolithiasis in cattle may result from the gelation of silicic acid in the kidneys because of low urine pH accompanied by increased concentration resulting from normal kidney function. [See also *V.B.* **29,** 1488 & 3576.]

—R. V. L. Walker.

Cornelius, C. E., Moulton, J. E. & McGowan, B., Jr. (1959). **Ruminant urolithiasis: I. Preliminary observations in experimental ovine calculosis.**—Amer. J. vet. Res. **20,** 863-871. [Authors' summary modified.] **1154**

A pelleted ration with a high ratio of concentrate to roughage (4 : 1) and containing 2·5% K_2HPO_4 consistently produced a high incidence of urolithiasis in yearling wethers. Occlusion at the sigmoid flexure or urethral process with subsequent rupture of the bladder were common findings. The urine contained aggregates of phosphatic "microcalculi" bound in organic envelopes which stained positively with periodic acid-Schiff stain.

Sheep fed the "calculus-provoking" diet excreted more sodium, phosphorus, and mucoproteins in their urine than when fed lucerne hay.

Addition of acetazolamide to the diet did not decrease the incidence of urolithiasis.

Mariottini, V. (1959). Aspetti clinici e terapeutici della cheratinizzazione della lingua da avitaminosi A nei vitelli lattanti. **[Clinical and therapeutic aspects of keratinization of the tongue due to vitamin A deficiency in unweaned calves.]**—Veterinaria, Milano **8,** 123-124. **1155**

Vitamin A deficiency in unweaned calves may result in keratinization of the tongue and difficulty in sucking. Clinical and therapeutic aspects are discussed. Intramuscular vitamin A and oral fish-liver oil cured the condition without complications.—F. R. Paulsen.

Anon. (1959). **The role of vitamin E in animal nutrition.** pp. 56. Basle: F. Hoffman-La Roche & Co. Ltd. **1156**

This gives a general account of the structure and properties of vitamin E and of the conditions associated with vitamin E deficiency (including reproductive disturbances, muscle degeneration, lesions in the blood vessels and liver and reduced carcass quality). The manifestations in the various species are described, with numerous illustrations and 389 references. The circumstances under which deficiency of the vitamin may occur are discussed and means for its prevention indicated. Tables summarize the symptoms and pathology of the deficiency diseases, and state the species and the ages at which they are susceptible. The mortality and vitamin E requirements are also given. Recent work in which selenium has been found to prevent certain diseases associated with vitamin E deficiency is summarized in an addendum.—E. J. Castle.

Morrison, A. B. & Sarett, H. P. (1959). **Effects of excess thiamine and pyridoxine on growth and reproduction in rats.**—J. Nutr. **69,** 111-116. [Authors' summary modified.] **1157**

Groups of female newly-weaned rats were fed a basal diet containing 150 μg. of thiamine and of pyridoxine per 100 g. of diet, alone or supplemented with 50 times this level of thiamine or pyridoxine or both. After 12 weeks the animals were mated. Excess thiamine or pyridoxine or both had no effect on weight gain, reproductive performance, or the concentrations of solids, total lipid, riboflavin, pyridoxine, pantothenate and vitamin B_{12} in the liver after parturition and lactation. Liver thiamine in these animals, and in their young at weaning, was greatly increased by excess

thiamine. Liver pyridoxine in the mothers was not increased by excess dietary pyridoxine, although pyridoxine stores in the livers of the young at weaning were greatly increased by excess pyridoxine intake of the mothers.

Hart, L. I. & Andrews, E. D. (1959). **Effect of cobaltic oxide pellets on the vitamin B_{12} content of ewes' milk.**—Nature, Lond. **184,** Suppl. No. 16 p. 1242. **1158**

Of 27 pregnant ewes on pasture marginally deficient in Co, 14 were given a cobaltic oxide pellet one month before lambing. Four months later the average vitamin B_{12} content of the milk in the treated ewes was 10·3 μg./ml. compared with 2·5 μg./ml. in the controls.—M.G.G.

Schaetz-Debladis, N. (1958). Contribution à l'étude de la parésie gastro-intestinale de la lapine nourrice. [**Gastro-intestinal paresis of lactating rabbits.**] — Thesis, Paris (Alfort) pp. 56. **1159**

A disease referred to as post-partum paralysis, or tympanites of suckling does was given the name gastro-intestinal paresis by Lesbouyries & Guilhon [*V.B.* **17,** 1599]. The author observed 13 cases and suggested glucose therapy and for valuable Angora rabbits, cortisone.—R.M.

Worden, A. N., Reid, T. F. & Kent, S. E. (1959). **Soluble lactates in experimental pregnancy toxaemia.**—Vet. Rec. **71,** 445. **1160**

Hypoglycaemia and ketonaemia were induced in 12 ewes by reducing their rations drastically before lambing. Six were given calcium sodium lactate at the rate of 1 g. per kg. body wt. daily and did not develop clinical pregnancy toxaemia but three of the 6 untreated ewes did. The only uncomplicated case recovered after treatment with calcium sodium lactate.—E. J. Castle.

Gallagher, C. H. (1959). **Biochemical studies on ovine pregnancy toxaemia. I. Enzymic activities of liver and brain.**—Aust. J. agric. Res. **10,** 854-864. [Author's summary modified.] **1161**

Enzymic activities of liver and brain tissue from sheep with pregnancy toxaemia were measured. Anaerobic glycolysis and oxidations of tricarboxylic acid cycle intermediates and related substrates were normal for both brain and liver enzyme preparations. Fatty acid oxidation by liver mitochondria was abnormal.

Liver mitochondria from cases of pregnancy toxaemia were invariably incapable of oxidizing octanoate and palmitate, and frequently unable to oxidize propionate. The rate of propionate oxidation was low even when this substrate was oxidized. Starvation of ewes late in pregnancy did not inactivate the fatty acid oxidation chains of liver mitochondria. Possible reasons for the failure of lipid metabolism are discussed.

The dependence of sheep liver metabolism upon fatty acid oxidation is discussed. Insignificant amounts of glucose are absorbed from the alimentary canal in sheep and, even if absorbed, are not catabolized to supply acetyl coenzyme A for oxidation in the tricarboxylic acid cycle. Consequently sheep liver is prone to failure from interference with fatty acid oxidation.

Pregnancy toxaemia is discussed in relevance to the disturbance of fatty acid metabolism which is thought to be of considerable significance in the disease.

Assali, N. S., Holm, L. & Hutchinson, D. L. (1958). **Renal hemodynamics, electrolyte excretion and water metabolism in pregnant sheep before and after the induction of toxemia of pregnancy.**—Circulation Res. **6,** 468-475. **1162**

Severe renal ischaemia accompanied by increase in corticosteroids in the blood occurred in pregnant ewes which developed toxaemia induced by sudden starvation. Arterial blood pressure remained the same despite the ischaemia. Similarities between pregnancy toxaemia in ewes and women were discussed, but one difference was the absence of hypertension in ewes. The renal disturbance did not lead to pathological changes in the kidneys.—R.M.

Hallgren, W., Carlström, G. & Jönsson, G. (1959). **Studies on parturient paresis in dairy cows. III. Determination of calcium ion concentration in bovine serum in different hypocalcaemic and pseudo-hypocalcaemic conditions.** — Nord. VetMed. **11,** 217-249. [In English. Summaries in German and Swedish.] **1163**

To determine the degree in which the low blood calcium found in milk fever is associated with the calcium ion fraction, blood was studied from the following classes of cows: (1) normal, (2) "downers" (alert, but unable to rise, total blood calcium low but above the physiological threshold), (3) milk fever, (4) milk fever with convulsions, (5) grass tetany, (6) pseudo-hypocalcaemic conditions. Blood

phosphorus, magnesium, potassium, sodium, serum protein, pH and alkali reserve were also determined. Experimental hypocalcaemia was also studied in 6 cows in which the blood calcium had been precipitated by i/v sodium oxalate.

Only in groups 3, 4 and 5 and in the cows with experimental hypocalcaemia was the reduction in blood calcium due to any appreciable decrease in the circulating calcium ions.
—E. J. Castle.

Blackburn, P. S., Castle, M. E., Drysdale, A. D. & Strachan, N. H. (1959). **The effect of feeding hay or silage on the incidence of ketosis in dairy cows.**—Brit. vet. J. **115,** 145-155. **1164**

Fourteen Ayrshire cows in two balanced groups were fed a basic ration of either 10–12 lb. of hay and 5–6 lb. of fodder beet per day, or 60 lb. of grass silage and 9 lb. of dried grass. Blood acetone bodies were determined weekly, circulating eosinophiles counted and Rothera's test conducted daily on the milk. There were six cases of ketosis in each group. It was concluded that the two types of ration did not differ in their effect on the incidence and severity of ketosis.—E. J. Castle.

Paterson, J. Y. F. (1959). **Biochemical aspects of bovine ketosis.** — Vet. Rec. **71,** 473 & 474. **1165**

In normal dairy cows the 17-hydroxycorticosteroid level in the blood increased to significant levels 1 to 2 weeks before calving and in about a third of the cows there was another transient increase 2 to 4 weeks after calving. Blood glucose increased just before calving and in about two thirds of cows there was a decrease 2 to 4 weeks after calving. Seven cows with a previous history of ketosis were studied and four of these remained clinically normal with the normal blood change except for a transient ketonaemia 2 to 4 weeks after calving. One cow developed clinical ketosis 4½ weeks after calving. Ketosis may be the result of the accentuation or prolongation of normal blood changes.—E. J. Castle.

Woolley, D. W. (1959). **Antimetabolites. They help in discovery of metabolic pathways and in the understanding and treatment of some diseases.**—Science **129,** 615-621. **1166**

Antimetabolites specifically antagonize the biological action of naturally occurring essential metabolites which they resemble in structure. They combine with the active site of an enzyme excluding the normal substrate which then cannot take up its usual role. The antimetabolite is sometimes converted into products analogous to those normally formed, but which act antagonistically to the usual biological process.

Antimetabolites are used in the study and chemotherapy of disease and in the study of normal biological reactions in the body. Sulphanilamide, pyrithiamine and the various antimetabolites of serotonin which are used in the study of some mental disorders are given as examples.—E. J. Castle.

See also absts. **1014-1015** (ruminal fauna and flora); **1266** (report, Australia); **1280** (book, reproductive physiology and protein nutrition).

DISEASES, GENERAL

Edwards, B. L. (1959). **An aid to the diagnosis, prognosis and treatment of some diseases in the pig and other species.**—J. comp. Path. **69,** 281-291. **1167**

The specific gravity of whole blood and serum was estimated by a simple method [see *V.B.* **27,** 3780] in 46 pigs with piglet anaemia, haemolytic disease and other conditions. From this the haemoglobin value, serum protein concentration and degree of dehydration could be calculated. The haemoglobin values corresponding to a blood specific gravity between 1·035 and 1·046 in pigs under 8 weeks old are tabulated.—M.G.G.

Schulz, J. A. (1959). Die Lähmungsmyoglobinurie des Pferdes. **[Paralytic myohaemoglobinuria in horses.]** — Mh. VetMed. **14,** 466-473. **1168**

In East Germany, from 1954 to 1957, 19% of deaths from non-infectious diseases in horses were due to paralytic myohaemoglobinuria. 73% of cases occurred between October and January. Good methods of treatment are rest, venesection, infra-red and short wave therapy of the affected muscles, i/v injection of spasmolytic and analgesic drugs, administration of hypertonic sodium sulphate soln., and i/v infusion of 3–5 litres of 1·1%–5% sodium bicarbonate soln.—M.G.G.

I. Barnett, G. (1959). **The "Hamama" case.** —Vet. Rec. **71,** 481-484 & 485. **1169**

II. —. (1959). **The "Hamama" case. II. The**

judgment in the High Court of Justice, Queen's Bench division, Royal Courts of Justice, Friday, March 20th, 1959. — Ibid. 495-504 & 506. **1170**

I. This racehorse was bought from France for a high price and failed in a race after only 3 furlongs and was walked in "swaying like a drunken man". Immediate and subsequent veterinary examinations indicated a dilated heart: at P.M. examination 6 months later fenestrations in the heart were found. No veterinary certificate had been supplied at the time of purchase, though a verbal assurance of soundness had been given. The French owner, as plaintiff, sought payment of the £7,000 which had been withheld after the horse broke down in the race.

II. Judgment was entered in favour of the purchaser.—E.V.L.

Alexander, A. F. & Jensen, R. (1959). **Gross cardiac changes in cattle with high mountain (brisket) disease and in experimental cattle maintained at high altitudes.**—Amer. J. vet. Res. **20,** 680-689. **1171**

The right ventricle was relatively larger in 41 cattle with high mountain disease; there was pronounced hypertrophy of the right ventricle and mild hypertrophy of the septum. Moderate hypertrophy of the right ventricle developed in 40 clinically normal cattle kept at 9,000 ft. for 4 months, but not in 40 controls at 5,000 ft. I/v administration of fibrinous emboli prepared from the recipients' own blood did not cause cardiac hypertrophy. Chronic hypoxia, possibly causing an increase in pulmonary vascular pressure and viscosity and volume of the blood, is considered to be an aetiological factor.—M.G.G.

Tsiroyannis, E. (1959). **[Atelectasis and hyaline-membrane lesions in lungs of new-born calves.]**—Hellen. Ktēn., Thessaloniki **2,** 120-129. [In Greek. Abst. from French summary.] **1172**

In 6 of 12 calves which died 1 or 2 days after birth, histological examination revealed atelectasis and the presence of a hyaline substance, which took up eosin stain, lining the pulmonary alveoli and bronchioles. These formations were compared with the lesions of "hyaline membrane disease" of new-born babies, believed to be caused by inhalation of amniotic fluid before or during birth.—R.M.

Turner, H. N., Dolling, C. H. S. & Sheaffe, P. H. G. (1959). **Vital statistics for an experimental flock of Merino sheep. I. Death rates in adult sheep, in relation to method of selection, age, and sex.**—Aust. J. agric. Res. **10,** 581-590. [Authors' summary modified.] **1173**

Estimates of death rates are given for four mating groups in a flock of about 1,000 ewes, for each year from 1½ to 10½ years of age. Three of the groups are under selection for various characters, and the fourth an unselected control. The flock is run on extensive grazing. Between 1951 and 1957, the average death rate for ewes 1½ to 7½ years old was 2·2% per annum, while at the older ages the average was no higher than 7·3%. During the drought year 1957/58 losses averaged 3·8% for ewes up to 6½ years old, then rose steeply with age to 45·6% for ewes 9½ years old.

Average losses in rams to date in each age group have been less than 5%.

Baker, G., Jones, L. H. P. & Wardrop, I. D. (1959). **Cause of wear in sheep's teeth.** — Nature, Lond. **184,** Suppl. No. 20 pp. 1583-1584. **1174**

The authors suggested that in Australia abnormally rapid wear of sheep's teeth was caused by opal-phytoliths in pasture and forage plants. The hardness of sheep's teeth was measured; it was less than that of opal. —R.M.

Steinicke, O. & Nielsen, A. (1959). **Histological changes of the myenteric plexus of the stomach in "baby pig" disease.** — Nord. VetMed. **11,** 399-429. [In English. Summaries in German and Danish.] **1175**

Histological examination was carried out on 58 unweaned pigs of which 40 had died during the first 4 days of life, 23 after clinical signs of "baby pig disease". In 53 pigs there was ganglion cell degeneration which varied in degree and was most pronounced in the pyloric and oesophageal portions of the digestive tract. There was no gastroenteritis. The coeliac ganglion cells of 6 and the brain stem ganglion cells of 7 affected pigs were examined and found normal. Ganglion cell degeneration was accompanied by retention of stomach contents and the musculature of the pyloric region was thicker than that of the rest of the stomach. Although certain exogenous factors seem to be necessary for the development of the disease, hereditary factors may also be involved. The analogy between "baby pig disease" and congenital pyloric stenosis in infants is discussed. —T.E.G.R.

Bodingbauer, J. & Hager, G. (1959). Zur Frage der Aetiologie der Zahnunterzahl (Oligodontie) des Hundes. [**Aetiology of oligodontia in dogs.**]—Wien. tierärztl. Mschr. **46,** 213-230; 313-321. [Summaries in English, French and Italian.] **1176**

A large part of this paper is a criticism of H. Kretzer's dissertation "Prämolarverlust bei Caniden" (Giessen, 1951). The authors concluded that oligodontia was inherited and was not caused after birth by topographical peculiarities.—R.M.

Gordon, H. A., Wagner, M., Luckey, T. D. & Reyniers, J. A. (1959). **An encephalomeningeal syndrome selectively affecting newly hatched germfree and monocontaminated chickens.** — J. infect. Dis. **105,** 31-37. **1177**

Severe body tremors, unsteady gait, weakness and frequent losses were observed amongst newly hatched chicks of 7 hatches which had been reared germ-free or in association with only a single species of bacterium. Normal stock chickens hatched from the same clutches of eggs and subjected to the same procedures of egg shell sterilization, incubation and feeding but maintained in the usual laboratory brooder environment did not develop symptoms. The only discernible lesions in serial sections of the intact skull were proliferation of the meninges in the region of the cerebellum and medulla causing derangement of adjacent nervous tissues. No new cases occurred in any of 76 subsequent hatches. All attempts to transmit the condition have been unsuccessful. The condition may have been an egg-borne viral infection which was masked in the stock birds by the normal bacterial flora.—A. Ackroyd.

Fankhauser, R. (1959). Hydrocephalus-Studien. [**Studies on hydrocephalus.**] — Schweiz. Arch. Tierheilk. **101,** 407-416. [Summaries in English, French and Italian.] **1178**

F. discussed the types of hydrocephalus that occur in domestic animals. Acquired hydrocephalus was seen in a calf as a result of abscess formation in the thalamus and midbrain, and in an old dog with cerebral atrophy. (8 illustrations.)—R.M.

Bourne, G. H. & Golarz, M. N. (1959). **Human muscular dystrophy as an aberration of the connective tissue.**—Nature, Lond. **183,** 1741-1743. **1179**

Work based on the finding that connective tissue associated with muscular dystrophy contains appreciable 5-nucleotidase activity, which is not found in connective tissue of normal human muscle, demonstrated that connective tissues from 10 cases of muscular dystrophy had the ability to dephosphorylate a number of high energy phosphates.

The authors concluded that the fundamental defect in progressive muscular dystrophy may lie in the supporting connective tissue, and offered three possible interpretations of their results.—W. E. Parish.

Jones, H. G. & Mackie, W. S. (1959). **The metabolism in sheep of the alkaline earth products of fission. The absorption and excretion of ^{45}Ca and ^{89}Sr by Blackface wethers.**—Brit. J. Nutr. **13,** 355-362. [Authors' summary modified.] **1180**

Carrier-free ^{89}Sr and ^{45}Ca of high specific activity were administered simultaneously to Blackface wethers, both orally and intravenously. Absorption, retention and excretion were studied.

After simultaneous oral administration, the proportion of the dose absorbed and deposited in the skeleton was for Ca four times that for Sr.

Considerable discrimination against strontium occurred during the excretion of Ca and Sr by the kidney, the ratio being about 6 : 1.

The alimentary canal was much the more important route for the excretion of Ca and Sr. During excretion into it there was no discrimination between these elements either in total quantity or in the rate of initial appearance in the various regions of the gut.

Both elements were excreted into all parts of the alimentary canal, but principally into the small intestine.

There appeared to be little or no discrimination between calcium and strontium during their transfer from serum to bone.

Marsden, E. (1959). **Radioactivity of soils, plant ashes and animal bones.** — Nature, Lond. **183,** 924-925. **1181**

The alpha-ray activity of the bones of New Zealand calves and lambs was only 10% of that of the bones of their dams, with relatively less thorium; the dams had been grazed on pasture grown on soil of α-activity 8×10^{-12} c/g. The average activity of a large number of bones of other cows and sheep was about 5×10^{-12} c/g. bone ash, but in the case of 3 Suffolk sheep killed in 1921 the average activity as now measured was only 7×10^{-13} c/g. ash. This smaller activity may be due to

decay of mesothorium and products or in part to the lesser use of superphosphate fertilizers at that time.

Observations were made on the possible influence of superphosphate on plant and animal uptake of radioactivity. There was no significant difference in activity, about $1{\cdot}6 \times 10^{-12}$ c/g., of grasses taken from 2 farms in New Zealand which had for 10 years been heavily top-dressed with superphosphate and from 2 others which had received none. With certain exceptions, soils in the U.K. do not vary very much in α-activity and in general have a figure of 8×10^{-12} c/g.; plant ash from these soils gave results of about $1{\cdot}6 \times 10^{-12}$ c/g.; whole wheat and bran, results of the same order. Slow-growing mountain pastures, particularly in Wales, showed a remarkable α-activity; in one sample of Welsh grass ash it was $1{\cdot}7 \times 10^{-10}$ c/g., higher than that of superphosphate, though in fact no fertilizer had been used.—E.V.L.

I. Burch, P. R. J. (1959). **Measurements at Leeds following the Windscale reactor accident. Iodine-131 in human thyroids and iodine-131 and caesium-137 in milk.**—Nature, Lond. **183,** 515-517. **1182**

II. Spiers, F. W. (1959). **Measurements at Leeds following the Windscale reactor accident. Increase in background gamma-radiation and its correlation with iodine-131 in milk.**—Ibid. 517-519. **1183**

I. Measurements beginning five days after the Windscale accident were continued for about six weeks. Tests of thyroid activity in human subjects revealed increased activities which reached a peak about 12 days after the accident. The maximum rise was from 4·1 to 14 nc (1 nc = 10^{-9} curie), and the max. uptake was estimated at about 10^{-8} curie. The total body burdens of caesium-137 in human beings rose by as much as from 7·9 to 19·5 nc.

Measurements of iodine-131 and caesium-137 in milk from dairies in the Leeds area revealed increases of up to 20·6 nc and 1·0 nc respectively.

II. An attempt was made to correlate the gamma-ray dose rate on a lawn and in a house at Leeds with measurements reported in I. above. Close correlation was not obtained but this may be due to the expected variation in the feeding of cattle and management of dairies.—G. B. S. Heath.

Kudryavtsev, A. A. & Vertunov, A. I. (1959). **[Use of labelled atoms in animal husbandry and veterinary science.]**—Veterinariya, Moscow **36,** No. 9 pp. 11-17. [In Russian.] **1184**

A review of recent Russian literature (without full references).—R.M.

Catarsini, O. & Barresi, E. (1959). La biopsia epatica in medicina veterinaria. (Rassegna sintetica con osservazioni personali). **[Liver biopsy in veterinary medicine.]**—Zooprofilassi **14,** 593-633. [Summaries in English and French.] **1185**

Methods of liver biopsy, for experimental and diagnostic purposes, are reviewed and personal observations on their use for the study and diagnosis of liver diseases in the dog are recorded.—T.E.G.R.

Mora, A. (1959). I cosiddetti infarti adiposi del fegato, nel bue e nel cavallo. (Steatosi infartiforme paralegamentosa). **[Fatty infarcts of the liver in cattle and horses.]**—Zooprofilassi **14,** 555-561. **1186**

Fatty infarcts occur at the points of insertion of the hepatic ligaments. Their formation is ascribed to mechanical causes whereby brusque stretching of the ligaments brings about strong spastic contraction of the regional arteries.—T.E.G.R.

Clarkson, T. B. (1959). **Diagnosis of hepatic cirrhosis in the dog.**—Mod. vet. Pract. **40,** No. 11. pp. 36-38. **1187**

This is based on symptoms but supported by the following tests: (1) Icteric index. Serum bilirubin is elevated in biliary but only in 50% of portal cirrhosis cases. (2) Bromsulphalein clearance. This is simple and reliable. Retention of bromsulphalein occurs in almost all cases of cirrhosis. 10 mg. of dye per kg. body wt. is administered i/v and the amount retained after 20 min. measured. Up to 50% may be retained. (3) Total serum albumin level. Hypoalbuminaemia is constantly present. Degree of this gives approx. degree of cirrhosis. (4) Biopsy (samples being taken with a Silverman needle).

—Irene M. Grisedale.

Buonaccorsi, A. (1959). Il tempo di protrombina prima e dopo carico con vitamina K, come prova di funzionalità epatica nel cane. **[Prothrombin time, before and after administration of vitamin K, as a test for liver function in dogs.]**—Ann. Fac. Med. vet. Pisa **11,** 219-231. [Summaries in English and French.] **1188**

The prothrombin time was markedly increased in 11 dogs, slightly increased in 4, decreased in one and normal in 2 of 18 dogs

with liver disease. Administration of vitamin K caused a return to normal in some cases of marked increase; it caused a further increase in those with a slight increase; it did not affect normal prothrombin time; and, it caused a further decrease in the dog with decreased prothrombin time.—T.E.G.R.

Zimmerman, G. R. & Folk, G. E., Jr. (1959). **Aortic medial calcification and lowered metabolism in ground squirrels.** — Nature, Lond. **183,** 754-755. **1189**

Ground squirrels kept under lab. conditions over three years including one year's hibernation showed no signs of medial calcification, although this was apparent in half the control animals, which were not allowed to hibernate. The evidence suggested that lowering metabolism (by hibernation) in some way reduced the occurrence of medial calcification.—D. S. Papworth.

POISONS AND POISONING

Luedke, A. J., Bratzler, J. W. & Dunne, H. W. (1959). **Sodium metabisulfite and sulfur dioxide gas (silage preservative) poisoning in cattle.**—Amer. J. vet. Res. **20,** 690-696. **1190**

Cattle fed for over 5 years on silage treated with metabisulphate did not show any signs of toxicity. Large doses of sodium metabisulphite or sulphur dioxide, administered to 5 cattle through rumen fistulae, caused death in 16–37 days. Anorexia was a consistent symptom. Lesions occurred in the first part of the digestive tract, the larynx and the tracheal mucosa.—T.E.G.R.

Chomse, H. & Arend, I. (1959). Über die vorbeugende Entgiftung von fluorhaltigen Konservierungsmitteln. **[Administration of calcium salts for preventing fluorine poisoning from wood preservatives.]**—Mh. VetMed. **14,** 634-636. **1191**

Rats tolerated a dose of 0·2 g./kg. body wt. of a wood preservative containing tar oils, sodium hydroxide and 47% sodium fluoride, if calcium carbonate had been added. Addition of calcium sulphate did not protect the rats. Removal of the fluoride prevented toxicity. A calf dosed with 0·34 g. of the preservative plus 0·25 g. of calcium carbonate per kg. body wt. recovered after showing toxic symptoms. A calf given the dose of preservative alone died from acute poisoning. —M.G.G.

Berwyn-Jones, M. (1960). **"Chronic" copper poisoning of sheep.** — Vet. Rec. **72,** 27-28. [Author's summary modified.] **1192**

An outbreak of "chronic" copper poisoning in sheep due to the feeding of a meal rich in copper and primarily intended for feeding to sows is described. Thirty-seven ewes were lost from a flock of 78.

Wahlstrom, R. C. & Olson, O. E. (1959). **The relation of pre-natal and pre-weaning treatment to the effect of arsanilic acid on selenium poisoning in weanling pigs.** — J. Anim. Sci. **18,** 578-582. **1193**

Piglets fed 10 p.p.m. selenium showed a reduction in weight gain and more toxicity symptoms than piglets whose dams had been given selenium in the diet during their growth, gestation, and lactation. 0·01% arsanilic acid in the selenium ration increased growth rate, feed consumption and feed efficiency, and reduced visible poisoning symptoms. More benefit from arsanilic acid was noted in those pigs whose dams had been fed on selenium-free rations.—D. S. Papworth.

Setchell, B. P. (1959). **Effects of carbon tetrachloride on kidney and liver function in the sheep.** — Nature, Lond. **184,** Suppl. No. 16 pp. 1242-1243. **1194**

Five adult wethers, weighing 35–42 kg., were drenched with a mixture of 50 ml. carbon tetrachloride and 100 ml. liquid paraffin. Three died and 2 remained clinically normal. Tests revealed severe liver dysfunction in all the sheep, but severe kidney dysfunction only in those that died.—M.G.G.

Silver, A. (1959). **Histological changes due to organophosphate poisoning in chickens.**—J. Physiol. **148,** No. 2. pp. 66P-67P of Proceedings. **1195**

Lesions in the sciatic nerves and spinal cord of hens dosed with triorthocresyl phosphate (TOCP) were compared with those resulting from section of the sciatic nerve. Tissues of normal hens were also examined.

The results do not provide evidence for a Wallerian reaction but tend to support the original idea of Smith & Lillie that TOCP may be a specific myelin poison. But in view of the danger of artefacts it seemed unwise to draw definite conclusions about the site of attack of the drug from histological changes alone.—R.M.

Kita, T., Shibanai, M., Takahashi, M. & Yasuda, Y. (1959). **[Urea poisoning in ruminants. I. Experiments on goats.]** — J. Jap. vet. med. Ass. **12,** 302-306. [In Japanese. Abst. from English summary.] **1196**

Poisoning was induced in 7 goats by introducing 50% urea solution into the rumen. The terminal stage was characterized by paralysis of respiration. Goats previously fed rations containing urea withstood several times the dose normally toxic.—R.M.

Cretzeanu, C. & Pastea, Z. (1959). Intoxication par la warfarine chez des porcelets récemment sevrés. **[Warfarin poisoning in weaned piglets.]**—Rec. Méd. vét. **135,** 823-835. [Summaries in English and Spanish.] **1197**

The clin. picture and P.M. lesions are described in an outbreak of warfarin poisoning in which 109 newly-weaned piglets died. Deaths ceased after i/p administration of 20–25 ml. of citrated pigs' blood every 3 days, in combination with vitamin K_1 therapy. The poison had been used a week previously against rats, which must have brought it into the sties. The findings indicated that warfarin has a pronounced irritant effect.—M.G.G.

Rasmussen, F. (1959). Sort natskygge, en mulig forgiftningsårsag. **[Woody Nightshade (Solanum nigrum), a possible cause of poisoning.]** —Medlemsbl. danske Dyrlaegeforen. **42,** 626-628. [In Danish.] **1198**

The weed *S. nigrum* is increasing in distribution and often dominates beet fields. As the harvested beet tops often contain much weed with risk of poisoning of cattle and pigs, R. studied whether ensilage would reduce the alkaloid (solanin and solaninin) content. Fresh and ensiled (3 and 7 months) samples from two districts were analysed. The total toxic content of one sample was double that of the other. The alkaloid content was reduced by ensilage of more than 3 months' duration. Rabbits fed for 10 days exclusively on *S. nigrum,* fresh or ensiled, developed no symptoms, loss of weight being attributed to the one-sided diet. The seeds of the fresh plant (but not those of the ensiled plant) recovered from the faeces of the rabbits were capable of germination. It was concluded that feeding of ensiled beet tops contaminated with *S. nigrum* is safer than feeding of fresh tops.—F.E.W.

Szuperski, T. (1959). Objawy kliniczne, anatomo- i histo-patologiczne u lisów srebrzystych i piesaków po doświadczalnym i leczniczym stosowaniu adipinianu i fosforanu piperazyny. **[Toxicity of piperazine phosphate and piperazine adipate for foxes.]**—Med. Wet., Warszawa **15,** 513-515. [In Polish. Summaries in English and Russian.] **1199**

48 foxes, about 7 months old and weighing on the average 5 kg., were divided into 2 groups and given 0·5 and 1·5 g. respectively of piperazine phosphate and adipate daily for 10 days. The animals which received the higher dose became dull, showed dyspnoea and these symptoms were more marked with piperazine phosphate. The animals were killed and P.M. and histological examinations revealed hyperaemia of the lungs, pancreas and spleen and degenerative lesions in liver and kidneys. No ill effect was noted when piperazine adipate was used therapeutically on 2,660 adult foxes at the rate of 0·1 g. per kg. body weight.—M. Gitter.

Bory, G. (1959). La dose tolérée et toxique de la saponine chez les chèvres et les moutons. **[The tolerated dose and toxic dose of saponin in sheep and goats.]**—Arch. Inst. Hessarek **11,** 53-56. **1200**

The tolerated s/c dose of a commercial preparation of saponin in 2 sheep and 2 goats was 3 mg., but sensitivity varied. One sheep tolerated 10 mg. The toxic s/c dose was 0·3 g.—M.G.G.

See also absts. **1267-1268** (reports, New Zealand); **1270** (report, Northern Rhodesia).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Kamalyan, G. V. (1959). **[Pharmacology of colamine (ethanolamine) and its use in digestive disorders.]** — Veterinariya, Moscow **36,** No. 8 pp. 63-66. [In Russian.] **1201**

Colamine was recommended for the treatment of gastro-enteritis, ruminal atony and tympanites in ruminants. The oral dose was 1–2 ml. for gastro-enteritis in calves and 3–5 ml. in 200–300 ml. water for tympanites in cows. For subcutaneous injection colamine hydrochloride was given in doses of 0·1–1·5 ml. in 10 ml. water for adults, 0·2–0·5 ml for calves.—R.M.

Nicol, T. & Sewell, I .A. (1959). **Effect of sulphonamides on the phagocytic activity of the reticulo-endothelial system.** — Nature, Lond. **184,** Suppl. No. 16 pp. 1241-1242. **1202**

Little or no effect on the phagocytosis of particulate carbon was seen in mice to which 13 sulphonamides had been administered for 6 days by the oral or s/c routes. Sulphadiazine and sulphisoxazole seemed to be mildly depressant.—M.G.G.

Gerola, E. (1959). Esperienze cliniche con un nuovo antibiotico : la colimicina. **[Some results of colimycin therapy.]**—Progr. vet., Torino **14,** 373-374 & 376. **1203**

Colimycin is prepared from cultures of the soil organism *Bacillus colistinus* [see *Chem. Abstr.* **51,** 1368d (1957)]. G. used it on calves with polyarthitis, navel-ill, gastro-enteritis (by mouth) and bronchopneumonia (by injection, combined with penicillin). Good results were claimed, especially in the last two conditions. Colimycin has also been used for dogs [*V.B.* **28,** 2787].—F. R. Paulsen.

Gorczyca, L. R. & McCarty, R. T. (1959). **Effects of prolonged low dosage antibiotic administration and superimposed Candida albicans infection on goat serum proteins.**—Antibiot. & Chemother. **9,** 587-595. [Summary in Spanish p. 637. Authors' summary modified.] **1204**

Prolonged low dosage of benzathine penicillin (i/m inj. of 300,000 units every second day for 42 days) produced a decrease in albumin and a relative increase in the globulins.

Prolonged low dosage of oxytetracycline (i/m inj. of 60 mg. daily for 42 days) produced an increase in albumin and beta-2 globulin and a decrease of other globulin fractions.

The effect of *C. albicans* infection in goats receiving benzathine penicillin was additive, with decreased albumin and increased total protein and gamma globulin; candida infection alone decreased albumin and increased gamma globulin.

Candida infection in goats receiving oxytetracycline produced a marked decrease in albumin, marked increase in beta-2 globulin, and changes in the other globulins.

Untreated goats and those given benzathine penicillin survived the infection. 4 of 5 goats given oxytetracycline died from candida infection.

Jaksch, W. (1959). Blutserumspiegelbestimmungen nach parenteralen Gaben eines Antihistamin-Penicillins bei Pferd, Schwein, Hund und Huhn. **[Serum concentrations after parenteral administration of an antihistamine-penicillin preparation to horses, pigs, dogs and fowls.]**—Mh. Tierheilk. **11,** 284-290. **1205**

A combination of penicillin with the antihistamine drug 1 (parachlorbenzyl)-2-(1-pyrrolidinylmethylene) benzimidazole has been used in human medicine to prolong the action of penicillin and also to treat patients allergic to penicillin. Following i/m or s/c inj. in animals, therapeutic concentrations of penicillin in the blood were maintained for 2 or even 4 days.—R.M.

Uvarov, O. (1959). **Corticosteroids in veterinary medicine.**—Vet. Rec. **71,** 335-344. **1206**

Corticosteroids alleviate discomfort and anxiety, and are an important aid to therapy of eye and skin diseases. Differential diagnosis and adjunct therapy are important, since the steroids are not curative, but merely reverse or suppress symptoms. Records of failures and successes in veterinary uses will assist in evaluation. Side effects of these potent hormones may arise, so that safeguards and careful use are advised, as is a knowledge of previous case-history.—F. R. Paulsen.

Müller, L. F. & Lettow, E. (1959). Beitrag zur Chlorpromazin-Anwendung beim Hunde. II. Teil: Chlorpromazin beim lebergeschädigten Hunde. **[Use of chlorpromazine in dogs. II. In dogs with liver damage.]**—Zbl. VetMed. **6,** 340-348. [Summaries in English, French and Spanish.] **1207**

Twenty-four dogs, being used in a study of liver damage by carbon tetrachloride, were used concurrently to ascertain whether chlorpromazine increases this damage.

Comparison is made between English and American records in human medicine of the very real danger of liver damage due to prolonged high chlorpromazine dosage, or its combination with ether anaesthesia, and veterinary records of failure to establish liver damage after prolonged chlorpromazine dosage.

Dogs with liver damage tolerated chlorpromazine well, but the greater the damage, the less the amount of chlorpromazine necessary for tranquillization. Moreover chlorpromazine treatment did not retard repair. Photomicrographs of CCl_4 intoxicated liver and subsequent repair, and one graph are included.—Irene M. Grisedale.

See also absts. **948** (isoniazid); **963** (mastitis); **984-985** (antibiotics in genital vibriosis); **1000** (amphotericin B and griseofulvin); **1005** (nitrofurazone in trypanosomiasis); **1008-1010** (coccidiosis); **1038** (influenza in foals); **1086-1090** and **1092-1096** (parasiticides); **1099-1102, 1105, 1109-1110, 1114, 1116, 1121-1122, 1199 and 1222** (anthelmintics); **1139** (bloat); **1140** (effect of penicillin, sulphates and furazolidone on growth in chicks); **1241** (effect of large doses of oestrogen on calcium and inorganic phosphate levels in serum); **1276** (British veterinary codex, 1959 supplement).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

Taneja, G. C. (1959). **Sweating in cattle. II. Cutaneous evaporative loss measured from limited areas and its relationship with skin, rectal and air temperatures. III. Mechanism of water transportation through the skin. IV. Control of sweat glands secretion.**—J. agric. Sci. **52,** 50-61; 62-65 & 66-71. **1208**

A capsule method for measurement of cutaneous evaporation from limited areas is described. Three calves (Shorthorn, zebu × Australian Illawarra Shorthorn, and American zebu) 7–8 months old, were exposed to different combinations of temperature and humidity. In all the calves cutaneous evaporation increased with air but not with rectal temp. Only in the zebu and the zebu cross was sweating from the shoulder area greater than from the belly area. The water losses from the shoulder skin in the zebu cross increased linearly with increases in skin temp. In the Shorthorn there was little increase in sweating in this area, although skin temperatures rose higher than in the zebu cross.

The zebu cross and shorthorn calves were exposed to controlled atmospheric conditions and sweating from the belly area measured. The temp. of the skin under test and of the air passed over the skin in the capsule, was taken. The amount of water passing through the skin was proportional to the difference between the saturated water-vapour pressure at skin temp. and the water-vapour pressure of the air. Water-vapour pressure differences ranged from 9 to 25 mm. Hg.

Two calves (zebu, Aberdeen Angus) 7–8 months old, were used to determine the effect of various drugs on the sweat glands. Cutaneous evaporation was measured as before. Adrenaline increased sweating and Dibenamine suppressed it, whilst noradrenaline, tolazoline hydrochloride (Priscol), atropine and acetylcholine had no effect.

—E. J. Castle.

Symington, R. B. (1959). **Light regulation of coat-shedding in a tropical breed of hair sheep.**—Nature, Lond. **184,** Suppl. No. 14 p. 1076. **1209**

In Rhodesia the coat of Persian Blackhead ewes became long, dense and shaggy after exposure to 14 hours of darkness, 4 of light, 2 of darkness and 4 of light each day. The same effect was observed in rams kept for 4–8 months in pens roofed with a translucent plastic that reduced the intensity of the daylight. In controls the coat remained short and sleek.—M.G.G.

Joubert, D. M. & Bonsma, J. C. (1959). **Gestation of cattle in the sub-tropics, with special reference to the birth weight of calves.** — S. Afr. J. agric. Sci. **2,** 215-230. [Summaries in French and Afrikaans. Authors' abst. modified.] **1210**

The gestation period in Afrikaner and crossbred cattle is longer than in cattle of European type, but the Afrikaner is smaller at birth. In general, prolongation of pregnancy results in a heavier calf, and pregnancy is longer for a male calf. The age of the dam is immaterial. The sire may influence both length of pregnancy and birth weight, but no seasonal effect is evident.

Anon. (1959). **Nomenclature of blood-clotting factors. Acceptance by the International Committee on Nomenclature of four factors, their characterization and international number.** — Brit. med. J. May 16th, 1292-1294. **1211**

In 1954 an international committee for the standardization of blood clotting factors was established because different workers had given different names to the same factors. The committee has recommended that roman numerals should be used and the author should be free to add whichever synonym he wished. At present, the eight factors which are recognized are.— Factor I (fibrinogen), Factor II (prothrombin), Factor III (tissue thromboplastin), Factor IV (calcium), Factor

V (proaccelerin), Factor VII (proconvertin), Factor VIII (antihaemophilic globulin), Factor IX (Christmas factor).—G. B. S. Heath.

Didisheim, P., Hattori, K. & Lewis, J. H. (1959). **Hematologic and coagulation studies in various animal species.**—J. Lab. clin. Med. **53,** 866-875. **1212**

Routine haematological tests were carried out on blood from cows, sheep, chickens, ducks, dogs, cats, monkeys, rabbits, racoons and opossums. The most noteworthy differences from man were that chicken and duck blood showed no differences between clotting times in glass and silicone tubes and complete deficiency of thromboplastin generation in the duck as judged by the thromboplastin generation test. The authors emphasize the importance of using homologous species systems when studying coagulation mechanisms.—G. B. S. Heath.

Boggs, D. E., Williams, H. H., Bowie, W. C. & Dye, J. A. (1959). **Carbohydrate metabolism in the rumen.**—Cornell Vet. **49,** 303-319. **1213**

Some aspects of carbohydrate metabolism in cultures of mixed rumen micro-organisms have been studied by means of the continuous-flow technique previously described [*V.B.* **28,** 2115]. The concentration of fatty acids in the incubation flask tended to remain constant, and the relative proportions of propionic, acetic and butyric acids were roughly the same before and after incubation.—R.M.

Schindler, W. J. & Knigge, K. M. (1959). **Adrenal cortical secretion by the golden hamster.**—Endocrinology **65,** 739-747. **1214**

Venous blood from the adrenal glands of hamsters contained hydrocortisone but no other steroid was detected. Although the rate of blood flow through the adrenal was comparable to that of other species, the concentration of steroids in hamster blood was 4–10 times lower than that of other species, and was the lowest so far recorded.—R.M.

Fleischer, S., Vidaver, G. & Haurowitz, F. (1959). **The rate of incorporation of S^{35}-amino acids into hair protein.**—J. biol. Chem. **234,** 2717-2718. [Authors' summary modified.] **1215**

Rats were injected intravenously with S^{35}-yeast protein hydrolysate. The specific radioactivity in different zones of the keratin in growing hair during 2 to 4 days after injection was determined by microdensitometry of autoradiograms. The changes in activity reflected analogous changes in the specific activity of the incorporated amino-acids.

Bhargava, P. M., Bishop, M. W. H. & Work, T. S. (1959). **The chemical composition of bull semen with special reference to nucleic acids, free nucleotides and free amino acids.**—Biochem. J. **73,** 242-247. **1216**

Bull spermatozoa contain no ribonucleic acid; they contain a large free nucleotide pool and a very small free amino-acid pool. Bull seminal plasma contains a higher concentration of free amino-acids, and very low concentrations, if any, of free nucleotides and nucleic acids.—R.M.

Bhargava, P. M., Bishop, M. W. H. & Work, T. S. (1959). **Incorporation of [^{14}C] amino acids into the proteins of bull spermatozoa.**—Biochem. J. **73,** 247-256. [Authors' summary modified.] **1217**

The incorporation of radioactive amino acids into the proteins of bull semen has been measured. In whole semen, the incorporation is exclusively into the spermatozoon protein, and the rate is about one-twentieth of that into reticulocyte protein.

Small numbers of bacteria were always present in semen but did not account adequately for the observed incorporation. The rate of incorporation into both spermatozoa and reticulocytes was inversely related to the concentration of cells. The effect of various inhibitors on the incorporation reaction was examined. It is concluded that the incorporation reaction in spermatozoa is unlikely to be a true measure of protein synthesis.

Mosimann, W. (1959). Neutralfette, Phosphatide und Cholesterin im Samenblasenepithel des Bullen. **[Neutral fat, phosphatides and cholesterol in epithelium of seminal vesicles of bulls.]**—Schweiz. Arch. Tierheilk. **101,** 386-392. [Summaries in English, French and Italian.] **1218**

Histochemical methods revealed that prismatic cells of the epithelium contained alkaline phosphatase and phosphatides. The basal fat cells contained fat and cholesterol but not phosphatides.—R.M.

I. Gibbons, R. A. (1959). **Chemical properties of two mucoids from bovine cervical mucin.**—Biochem. J. **73,** 209-217. **1219**

II. Gibbons, R. A. & Glover, F. A. (1959). **The physicochemical properties of two mucoids from bovine cervical mucin.**—Ibid. 217-225. [Authors' summaries modified.] **1220**

I. Two samples of mucoid, one isolated from mucin obtained at oestrus and the other from pregnancy mucin, were found to consist of 75–80% of carbohydrate and 20–25% of amino-acid residues, and to behave chemically in a manner similar to the human blood-group substances. Sialic acid content is one of the factors affecting the physical properties of mucin.

II. Sedimentation, viscosity and flow-birefringence measurements have been carried out on two samples of bovine cervical mucoid.

The specific viscosity of the sample from animals in oestrus is about twice that of the sample from pregnant cows, indicating that the oestrous mucoid is more expanded than the pregnancy mucoid.

Pamukcu, A. M., Price, J. M. & Brown, R. R. (1959). **Identification and determination of kynurenin and 3-hydroxykynurenin in bovine urine.**—Amer. J. vet. Res. **20,** 597-602. 1221

Healthy cows on normal diet excreted in the urine 8–20 mg. of L-kynurenin and 7–29 mg. of 3-hydroxy-L-kynurenin per g. of creatinine. The possible relationship between bladder cancer in cattle and urinary metabolites of tryptophane was discussed. [See also *V.B.* **29,** 3210.]—D. S. Papworth.

See also absts. **1014-1015** (ruminal ciliates); **1277-1279** (books, anatomy); **1280** (book, reproductive physiology and nutrition); **1281** (book, veterinary obstetrics).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

Cieleszky, V. & Kovács, F. (1959). **The effects of carbon tetrachloride on the milk and milk products of cattle.**—Acta vet. Acad. Sci. hung. **9,** 441-447. [In English.] 1222

An account in English of work previously abstracted [*V.B.* **29,** 3649].—R.M.

See also absts. **976-977** (human brucellosis).

LIVESTOCK HYGIENE

I. Ademollo, A. (1959). Inspection, dans les aéroports, des animaux et produits d'animaux. Traitement des déchets, notamment alimentaires, provenant, des avions. [**Veterinary aspect of transport of animals and animal products by air.**]—Bull. Off. int. Epiz. **52,** May. pp. 97-117. [Summaries in English and Spanish.] 1223

II. MacIntosh, K. S. (1959). Inspection à l'aéroport, des animaux, des produits animaux et des produits d'origine animale. Traitement des déchets, notamment des déchets alimentaires produits pendant le vol. [**Veterinary inspection at airports of animals and animal products.**]—Ibid. pp. 118-129. [Summaries in English and Spanish.] 1224

III. Nielsen, F. W. (1959). Soins à donner, dans les transports à l'intérieur des pays et dans les transports internationaux aux animaux vivants. [**Transport of livestock.**]—Bull. Off. int. Epiz. **52,** May. pp. 130-137. [Summaries in English and Spanish.] 1225

IV. Reid, J. (1959). Le transport des animaux à l'intérieur du pays et sur le plan international. [**Transport of livestock.**] — Ibid. pp. 138-154. [Summaries in English and Spanish.] 1226

V. van den Born, J. M. (1959). Soins à apporter aux animaux vivants dans les transports à l'intérieur des pays et dans les transports internationaux. [**Transport of livestock.**]—Ibid. pp. 155-167. [Summaries in English and Spanish.] 1227

I. Ademollo emphasizes the danger of infection not only through the transport of animals but also of arthropods, quoting the recent discovery of Rift Valley fever in animals in South Africa grazing near an airport. As the international air transport of animals is continually increasing he emphasizes the importance of food remains at airports being incinerated and not fed to animals. Although full time veterinary services at international airports are hardly necessary at present, some rules for international observation should be laid down by ICAO and/or IATA.

II. MacIntosh gives details of arrangements in Australia to deal with transport of animals by air. The practice is to avoid all risks and in doubtful cases incineration is advised. He recommends that all international airports should have a suitably sized incinerator available at all times.

III. N. gave the rules at present in force in Denmark dealing with the transport of livestock by sea, rail, or road. He mentioned that there are none in force so far for air transport.

IV. R. dealt with the possibility of

extension of disease, the economic effect of livestock transport, and the protection and humane treatment of animals during transportation. He gave a brief outline of British practice in the prevention of the importation of infected animals and the general rules regarding transport of livestock.

V. van den Born criticized the lack of agreed regulations for the international transport of livestock, suggested an expert commission to draw up minimal conditions, and pointed out that agreement on this had already been reached by the Common Market Countries while the Council of Europe in addition had passed a resolution as regards the transport of horses and cattle. In these services the Veterinary Officer is in a key position.—W. K. Dunscombe.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Hancock, J. L. & Hovell, G. J. R. (1959). **The collection of boar semen.**—Vet. Rec. **71,** 664-665. **1228**

The operator, wearing rough-faced "post-mortem" rubber gloves, stands on the boar's right side as it mounts the teaser. The encircling thumb and index finger of the pronated right hand act as "artificial vagina", with the little finger about 1 cm. from the tip of the glans. Grip is maintained till collection is complete and ejaculate collected into a jar, through a funnel containing glass wool. 20 very satisfactory ejaculates have been collected from 5 boars.—F. L. M. Dawson.

Hancock, J. L. (1959). **Pig insemination technique.**—Vet. Rec. **71,** 523-526 & 527. **1229**

18 control sows were served, slaughtered after 24–72 hours, and the oviducts and uterus flushed with saline for ova; any that were pronucleate or had cleaved were considered fertilized (95% of total including some from all sows).

Other sows, tested for oestrus with a vasectomized boar, were inseminated with fresh semen from 6 boars. The Aamdal & Hogset cuffed pipette was tried against the wire-stiffened polythene catheter favoured by Martin & Holt. There was little difference between the results but the polythene catheter was preferred.

Of 51 sows, only 27 could be inseminated into the uterus; 26 of these conceived and 88% of ova were fertilized. Only 5 of 10 sows intracervically and 8 of 14 intravaginally inseminated conceived, 100 and 60% of the ova, respectively, being fertilized.

—F. L. M. Dawson.

Bomstein, R. A. & Steberl, E. A. (1959). **Preservation of washed bovine spermatozoa in a synthetic medium at room temperature.** — Exp. Cell. Res. **18,** 217-229. [Authors' summary modified.] **1230**

A completely synthetic medium that permitted storage at room temperature of washed bovine spermatozoa for one week with 10% loss of initial motility is described. The respiratory ability and the adenosine triphosphate and diphosphate content of the stored cells decreased rapidly. The relationship of these to the "health" of the cells is not clear.

Krishna Rao, C. (1959). **Studies on the utility of various biological stains as semen stains. Parts II and III.**—Indian vet. J. **36,** 65-74 & 136-143. **1231**

R. recorded results of staining bull semen with 32 dyes, ranging from eosin to nile blue in the alphabetic series. In each case, the dye was used singly, though often a variety of formulations was employed. Both positive and negative staining were used, employing 4 different techniques, designated the conventional method, direct mixing method, dipping and blotting method, and ignition method. Several dyes gave excellent results, some were good negative stains, and others were useful for differentiating live and dead spermatozoa. [See also *V.B.* **27,** 2841-4; **28,** 285.]

—R. N. Mohan.

van Koetsveld, E. E. & Spruyt, J. (1959). De sporenelementen mangaan en koper in stierensperma. **[Manganese and copper in bull semen.]**—Tijdschr. Diergeneesk. **84,** 751-758. [Summaries in English, French and German.] **1232**

This work is based on the assumption that adequate amounts of these trace elements are required for successful reproduction in cattle. Samples of semen from 15 bulls were used. Spermatozoa from mixed semen samples contained 38–65 μg. manganese and 141–478 μg. copper per 100 ml. The seminal plasma contained from 2·2–4·6 μg. Mn and from 4–24 μg. Cu. Copper values for the individual bulls gave means of 298 μg. and 13·4 μg. for spermatozoa and seminal plasma respectively. The authors conclude that the great variation from bull to bull makes it impracticable to recommend supplementation of diluents. For

copper only, there was some slight positive correlation between trace element content of semen and fertilizing ability.

—F. L. M. Dawson.

Smith, B. V. K. & Lacy, D. (1959). **Residual bodies of seminiferous tubules of the rat.** — Nature, Lond. **184,** 249-251. 1233

Just before spermatozoa pass down the seminiferous tubules of the rat and various other small mammals, they each cast off a small mass of material to which the name "residual body" has been given. The authors described the formation, composition and fate of these bodies, as observed by light microscopy and by electron microscopy.—T.E.G.R.

Bonadonna, T. & Pozzi, G. C. (1959). Ricerche sulla spermiogenesi del "Gallus gallus" in diverse condizioni di luce e di temperatura ambiente. (Nota sperimentale). **[Spermatogenesis in cocks under different conditions of light and ambient temperature.]** —Zootec. e Vet. **14,** 194-208. 1234

In all 15 cockerels aged 18 months were subjected to illumination varying from total darkness to 24-hour illumination over a period of 115 days. Groups were exposed to 20°, 6° to 8°, and 15°C. The ambient temperature had little effect on spermatogenesis, but basal metabolic rate and testicular activity were increased with total illumination, whereas in darkness spermatozoa production fell sharply. Four birds were treated with anterior pituitary extract, which appeared somewhat to stimulate spermatogenesis.—F. L. M. Dawson.

Day, B. N., Anderson, L. L., Hazel, L. N. & Melampy, R. M. (1959). **Synchronization of estrus and ovulation in swine.**—J. Anim. Sci. **18,** 909-917. 1235

8 gilts received 40 Armour units [no further standardization given] of a gonadotrophin preparation, mainly follicle-stimulating hormone, intramuscularly during the luteal phase of the cycle, with 20–80 mg. oestradiol benzoate 24 hours later. No cleaved ova were recovered from any gilt; in two, cystic follicles were induced, but in 4 there was induced ovulation, and induced oestrus after 30 mg. oestrogen in one. Of 4 gilts treated on the 15–16th days of the cycle, oestrus was believed induced in 3 and cleaved ova were recovered from 2 of these. Another 16 gilts received 20–40 A.u. gonadotrophin only, at all stages of the cycle, which was unaffected in 3 and definitely reset in 8 as a result. In these, recycling could not be referred to dosage level or cycle stage at injection. In 4 gilts, additional injection of a luteinizing hormone preparation (15 mg.) had no effect on the formation of luteal tissue. A single injection of only 0·2 mg. oestradiol per lb. body wt. seemed adequate to induce acceptance of the boar in spayed gilts after usually 3 days. 50 mg. per 100 lb. of progesterone sufficed to suppress this reaction to as much as 1 mg. oestradiol.

—F. L. M. Dawson.

Edwards, R. G. & Sirlin, J. L. (1959). **Fate of spermatozoa penetrating into the tissues of the Fallopian tube.** — Nature, Lond. **183,** 1744-1745. 1236

Female mice which had been mated to males whose deoxyribonucleic acid in the spermatozoa had been radioactively labelled, provided no evidence on P.M. examination that spermatozoon deoxyribonucleic acid became incorporated into the uterine or tubal cells.—W. E. Parish.

Koike, T. & Kawata, K. (1959). **Studies on the tubal patency of the cow. I. Experiments made with slaughterhouse materials.**—Jap. J. vet. Res. **7,** 61-69. [In English.] 1237

47 sets of genital organs selected at random in an abattoir were subjected to normal saline injection through a catheter with a manometer in the circuit. The pressure was noted when water first passed the uterine ostium and was increased to 200 mm. Hg and the rate of fall measured. In 60 of the 94 oviducts, fluid passed at 80–150 mm. Hg and fall of pressure subsequently was rapid (normal pattern reaction). In 27 oviducts fluid only passed between 150–200 mm. Hg; 7 showed a similar rapid subsequent fall, in 20 pressure declined only very slowly. Seven would not transmit fluid at any pressure. Correlating both organs from each cow, 23 cows showed the normal pattern reaction bilaterally, 14 showed one normal and one abnormal oviduct, and 10 showed some degree of bilateral impairment. In only one case was this total.

Endometrial cultures and sections and tubal sections were taken. Only one case, with normal patency, showed bursal adhesions. The sections from the 60 "normal-type reaction" tubes included only 2 showing indications of salpingitis (in the ampulla). Of the sections from the 7 tubes showing a rapid pressure fall after fluid passage at 150–200 mm. Hg, 5 showed salpingitis, 2 at all levels, but only 2 of the 20 showing a slow pressure fall following high pressure passage and only one of the

7 which would not transmit fluid. Thus 24 tubes abnormal to the patency test yielded normal sections.—F. L. M. Dawson.

Hillemann, H. H., Tibbitts, F. D. & Gaynor, A. I. (1959). **Reproductive biology in chinchilla.** pp. 75. Middletown, New York: National Chinchilla Breeders of America. $1.50. **1238**

An account of the morphology, development and function of the genital systems in male and female chinchilla, based mainly on the authors' own work done at Oregon State College. Special attention is paid to the placenta. There are 16 plates of illustrations. —R.M.

Matveev, V. S. [Edited by.] (1959). **[Intra-uterine development of Soviet Merino sheep.]** pp. 340. Moscow: Izdatel'stvo akademii nauk SSSR. [Trud. Inst. Morfologii Zhivotnykh No. 23.] [In Russian.] **1239**

This collection of 9 papers is an important contribution to the embryology of sheep. The titles of the papers are as follows :— size of the foetus during intra-uterine development, by N. N. Tret'yakov; structure of skin and fleece of new-born fine-wooled sheep, by E. P. Panfilova; weight changes in skeleton and muscles during intra-uterine development, by S. N. Bogolyubskii; linear growth of the skeleton and ossification (two papers), by N. N. Tret'yakov; development of the gastro-intestinal tract, by L. V. Davletova; some respiratory functions of blood from sheep foetuses, by P. A. Korzhuev and others; ovaries and thyroid gland, by E. F. Polikarpova; and a comparison of the intra-uterine development of Merino and Précoce breeds, by S. N. Bogolyubskii. This book is well produced and contains numerous illustrations. Bound in paper covers it costs the equivalent of 26s. 6d.—R.M.

Arthur, G. H. (1959). **Some aspects of intersexuality in animals.** — Vet. Rec. **71,** 598-603. **1240**

The clinical and differential diagnosis and the structure of the genital systems of 3 types of intersexes in animals are discussed. The bovine freemartin, the altered female born twin to a bull calf, results from the earlier differentiation of the testes in the one twin over the ovaries in the other, and the anastomosis between the allantoic blood vessels of the two foetuses so that the development of sex organs in the heifer is retarded by the androgen from the bull calf whilst the vestigial male sex apparatus of the heifer is stimulated. Approximately 11 out of 12 heifers born co-twins to bulls are freemartins. The commonest type of porcine intersex looks like a gilt until the animal reaches puberty when it begins behaving like a boar. Dissection shows that in addition to testicles, there is a tubular genital tract, frequently duplicated, consisting of uterine horns and vagina as well as epididymes, vasa-deferentia, and male accessory glands. The female tract may become distended after puberty by uterine secretions probably stimulated by androgen from the testes and accumulated behind an imperforate or sealed cervix. Bovine virilism, the acquisition of the characteristics of the opposite sex when several years old, has been seen by the author only in mature Ayrshire cows. Partly luteinized cystic ovaries have been found in every case.
—A. Ackroyd.

Horváth, G. & Kutas, F. (1959). **Effect of large doses of oestrogen on the calcium and inorganic phosphate levels of the serum in domestic animals.** — Acta vet. Acad. Sci. hung. **9,** 183-187. [In English.] **1241**

In sows, mares, and cows, injection of a large dose of "Syntestrin forte" (stilboestrol dipropionate) depressed the serum calcium and elevated serum inorganic phosphate levels appreciably. But in bitches such changes were not marked and were most erratic. It would seem advisable to administer calcium preparations when oestrogen therapy is given to animals.—A. Ackroyd.

van Haaften, J. L. (1959). **Oestrogens in pasture.**—Nature, Lond. **184,** Suppl. No. 20 p. 1575. **1242**

The author suggested that the best way of detecting oestrogens in pasture plants was to feed the plants to spayed mice and to compare the weights of the uterus with those of mice receiving a basal ration only.—R.M.

Sanger, V. I. & Bell, D. S. (1959). **Estrogenic activity in green forage crops and its effect on breeding ewes.**—J. Amer. vet. med. Ass. **134,** 237-239. **1243**

Ewes grazing either Ladino clover, bird's-foot trefoil or bluegrass were studied for 3 years. The ewes grazing bluegrass had an earlier first oestrus, conception, and lambing than the others. Extracts from the Ladino clover and bird's-foot trefoil produced significant increases in uterine weight of immature white mice; those from the bluegrass did not. Vaginal smears from anoestrous ewes grazing

Ladino clover and bird's-foot trefoil were similar to those from controls receiving oestradiol. 22 ewes were pastured on Ladino clover and mated at first oestrus; they had 53% fertile eggs when slaughtered 72 hours later whereas similar ewes grazing bluegrass had 72% fertile eggs. The difference did not occur later in the season. These data suggest that Ladino clover and bird's-foot trefoil contain oestrogen-like substances which interfere with reproduction.—E. J. CASTLE.

Robinson, T. J. (1959). **The actions and interactions of a number of factors on the response of the growing lamb to oestrogen implants.**— Aust. J. agric. Res. **10,** 591-603. [Author's summary modified.] **1244**

An experiment using 576 lambs is described, to determine the potential value of oestrogen implants in the Australian fat lamb industry. Actions and interactions of age at implantation (5 or 9 weeks), type of oestrogen (hexoestrol or stilboestrol), dose (15 or 30 mg.), crossbreed (Border Leicester × Merino or Dorset Horn × Corriedale), sex and type of birth (single or twin) were examined. Owing to drought nutrition was only moderate.

Sixty-three lambs were lost. Mortality tended to be concentrated on 30 mg.-oestrogen, Dorset Horn × Corriedale, male lambs. Oestrogen-treated lambs (15 and 30 mg.) reached 75 lb. liveweight 2·5 and 1·9 weeks earlier than controls. Wether lambs grew faster than females. Treatment reduced dressing percentage and carcass weight by 1·8% and 1·1 lb. respectively. The dose of oestrogen was unimportant but the deleterious effect of stilboestrol was greater than that of hexoestrol. Carcasses of treated lambs were down-graded and there was a highly significant interaction between sex and treatment, carcasses of ewe lambs being more seriously affected than those of wethers. Treated carcasses were longer in the leg than untreated, and thinner in the loin and flank.

The general effect was seriously to delay maturity and market quality, with a reduction in weight of carcasses despite increased liveweight gains. In is concluded that oestrogen implantation is unlikely to have wide commercial application to fat lamb production in Australia.

Archibald, R. McG. & McKercher, P. D. (1959). **Haematoma and discoloration of the head of chickens as a sequel to oestrogenic pelleting.**—Canad. J. comp. Med. **23,** 237-238. **1245**

Following the injection of an oestrogenic pellet (diethylstilboestrol 15 mg.) at the base of the head some 15% of a flock of 750 chickens developed marked oedema of the head and the skin over the entire area became a deep bluish-green. While some respiratory distress was noted, most birds remained alert and active. P.M. examination revealed a heavy organized blood clot over the top of the head and sides of the face. Bacteriological studies were inconclusive and it was not clear whether the condition was due to mechanical injury or bacterial invasion, or to the pellet itself. The condition was reproduced in a test flock using the same materials and it is believed that the condition may be a common sequela to "pelleting".—R. V. L. WALKER.

Kahlson, G. & Rosengren, E. (1959). **Prevention of foetal development by enzyme inhibition.** — Nature, Lond. **184,** Suppl. No. 16 pp. 1238-1239. **1246**

To inhibit histidine decarboxylase in pregnant rats, a ration deficient in pyridoxine was fed and semicarbazide was injected for 8 days from the 7th or 15th day of pregnancy. P.M. examination on the 19th or 22nd days revealed disintegration and mummification of the foetuses and regression of the placentas.

—M.G.G.

Whitney, L. F. (1959). **The effect of malucidin on canine pregnancy.** — Vet. Med. **54,** 25-29. **1247**

Malucidin is a partially purified yeast extract which during testing for antibiotic properties was found to cause termination of pregnancy in mice and bitches, but in no other experimental animals. Seven bitches were used in the experiments, some of them as often as four times individually. 10 ml. of malucidin intravenously in a 60 lb. bitch was sufficient to cause resorption of embryos which had been allowed to reach half term. In 24–48 hours these were represented merely by red jelly-like clots and a shrunken placenta. A bitch in which pregnancy had been so terminated four times was able to conceive and produce puppies normally after the following mating. The drug does not damage the kidneys. At the first i/v injection the bitch shows severe symptoms of lowered blood pressure, which disappear in less than 24 hours. This can be almost completely obviated by giving a "desensitizing" dose of 10% of the

full dose, 10 min. before the remainder.

Mode of action is so far unknown. Photographs are appended.

—Irene M. Grisedale.

Anon. (1959). **Immunological aspects of infertility.**—Lancet June 27th, 1277-1278. **1248**

An annotation on two main facets of work on the antigenic properties of spermatozoa : (1) the attempt to produce contraception, or to reduce fertility in males, by immunological methods; (2) the possible importance of spermatozoan antigens in causing male sterility in man by autoimmune reactions.

—W. E. Parish.

Hupka, E. (1959). Über die Begattungsimpotenz der Jungeber (Epiphysiolysis). **[Impotence in young boars caused by separation of epiphyses of the femur.]**—Dtsch. tierärztl. Wschr. **66,** 201-203. [Summary in English.] **1249**

In an unstated number of young boars, a partial paralysis became apparent only when they were first expected to serve. Lesions chiefly affected the hip and knee joints (loosening of the articular cartilage or of the whole epiphysis, and subperiosteal bleeding towards the ends of the long bones) and the palate and gums. Hence scurvy is postulated as the cause, and the possible mechanism of failure to synthesize ascorbic acid discussed at some length. Various unspecified treatments were tried without success.

—F. L. M. Dawson.

Kiesel, G. K. & Dacres, W. G. (1959). **A study of infertility in cattle in Alabama.**—Amer. J. vet. Res. **20,** 760-765. **1250**

1,359 cervical swabs from cows in 40 herds which had failed to conceive to 3 services, were incubated on blood agar, Sabouraud's and thiol (CO_2 tension) media. 383 proved positive; the most common organisms being non-haemolytic staphylococci, *Escherichia coli,* haemolytic streptococci especially Group E, and *Vibrio* species both positive and negative to catalase.

Two-day cultures of *Streptococcus pyogenes,* pneumococcus (of uterine origin) and *Staphylococcus aureus* were each inoculated intracervically to a group of 3 maiden heifers, and again 4½ months later when pregnant, and 24 hours after calving. There were no subsequent recoveries of organisms and no effect on breeding efficiency as compared with controls.

Pleuropneumonia - like organisms were recovered from 7 of 16 animals, and passaged 4 times in chick embryos. One isolate was inoculated into 2 young calves without obvious effect. 139 cows were treated with various intra-uterine antibiotics usually within 24 hours of service. Overall 72% conceived within the next 3 heats but no controls were kept. The treatment was considered ineffective. [The authors consider these results corroborate those of Simon & McNutt, (*V.B.* **27,** 2860), that endometritis is a rare and unimportant condition, but other published work supports the opposite conclusion.]

—F. L. M. Dawson.

McKay, G. W. & Thomson, J. D. (1959). **Field observations on the treatment of cystic ovaries in cattle.**—Canad. J. comp. Med. **23,** 175-176. **1251**

In 12–14% of cases of infertility in well-managed dairy herds the ovaries were cystic. The symptoms ranged from anoestrus to virilism and frequent irregular heat periods were common.

Results of various routine treatments in which gonadotrophin preparations were administered with or without manual rupture of the cysts are described.

In 286 out of 422 cases (67·7%) with cystic ovaries conception took place following one treatment with chorionic gonadotrophin intravenously or intramuscularly. Of 80 cows treated one or more times, 55 (68·7%) conceived. The average length of time from treatment to conception was 41·3 days for those treated once and 100 days for those treated more than once.—R. V. L. Walker.

Brown, N. De D., Jr., Pfau, K. O., Mather, R. E. & Bartlett, J. W. (1959). **Effects of various postpartum treatments upon the reproductive efficiency of dairy cows.**—J. Dairy Sci. **42,** 1338-1345. **1252**

Over the years 1953–57, 305 puerperal and service periods in 137 Holstein cows were studied. 96 periods following normal calvings were untreated controls to 84 periods in which 500 mg. chlortetracycline had been given within 24 hours of parturition. The treated group had slightly poorer reproductive efficiency than the control, requiring 1·78 against 1·47 services per conception, but these differences were not significant.

After 24 calvings associated with dystokia or with placental retention for more than 12 hours, 15 mg. sulphadimidine was given daily for up to 4 days. Cure followed in 18 cases, while the remaining 6 were switched to daily

treatment with 500 mg. chlortetracycline. In this group 1·95 services per conception were required.

After 28 abnormal calvings as above, 500 mg. chlortetracycline daily was given as first instance treatment. Here 1·61 services were required per conception. This response was probably significantly better than that to sulphadimidine.

Of 11 untreated abnormal calving cases only 5 bred again subsequently.

—F. L. M. Dawson.

Deas, D. W. (1959). **A note on hereditary opacity of the cornea in British Friesian cattle.** —Vet. Rec. **71,** 619-620. **1253**

Hereditary opacity of the cornea in 3 herds of British Friesian cattle identical to that described by Rosenberger in Germany is reported. One common ancestor bull was associated with all the cases. A cloudy blue opacity of the cornea was the only lesion and was primarily an oedema of the propria with loosening and disruption of the laminae. The defect was recessive but not sex-linked.

—A. Ackroyd.

Weber, W. (1959). Über die Vererbung der medianen Nasenspalte Beim Hund. [**Inheritance of median nasal fissure in dogs.**]—Schweiz. Arch. Tierheilk. **101,** 378-381. [Summaries in English, French and Italian.] **1254**

Of the 26 offspring of a male Sennenhund with median nasal fissure, 11 had nasal fissure, harelip, cleft palate or combinations of these deformities. The responsible gene is dominant and is not sex-linked.—M.G.G.

Jordan, J. P., Kratzer, F. H., Johnson, A. M. & Freeman, R. L. (1959). **Fat deposition in musculature of the genetically dystrophic chicken.**—Proc. Soc. exp. Biol., N.Y. **101,** 449-451. **1255**

In fowls with inherited muscular dystrophy there was more crude fat in the superficial pectoral muscle than in normal fowls. Increased fat deposition was noted as early as 15 weeks of age.—R.M.

Shreffler, D. C. & Salisbury, G. W. (1959). **Distribution and inheritance of hemoglobin variants in American cattle.**—J. Dairy Sci. **42,** 1147-1156. **1256**

Determination of the two electrophoretically distinguishable adult bovine haemoglobin types in 121 bulls and 646 cows representing 9 breeds indicated that the Ayrshire, Holstein, Angus, Hereford, and Milking Shorthorn breeds probably have only Type A haemoglobin, whereas the Brown Swiss, Guernsey, Jersey and Sindhi breeds have both A and B types. No gross physiological differences were observed between animals of the two types.—A. Ackroyd.

See also absts. **938** (staphylococci from the bovine genital tract); **944** (avian tubercle bacilli in porcine abortion); **955** (listeria abortion in a ewe); **984** (survival of V. fetus in semen); **1040** (isolation of equine abortion virus in tissue culture); **1052** (virus and brucella abortion in sheep); **1138** (effect of nutrition on reproductive performance in boars); **1210** (gestation of cattle in the sub-tropics); **1280** (reproductive physiology and nutrition); **1281** (book, veterinary obstetrics).

ZOOTECHNY

Ford, G. W., Haesler, A. T. & Falzon, E. (1959). **Dairying under sub-tropical conditions in Malta.** — Proc. XVth Int. Dairy Congr., London **1,** 349-354. [Summaries in French and German.] **1257**

Dairying in Malta is beset with many difficulties, the major ones of which are here discussed. Reorganization of the dairy industry and the control of TB. in cattle and brucellosis in cattle and goats are under way. Optimism is expressed regarding the attainment of these objectives in the near future.

—T.E.G.R.

Foster, H. L. (1959). **Housing of disease-free vertebrates.**—Ann. N.Y. Acad. Sci. **78,** 80-88. **1258**

Housing constructed of masonry and steel with non-porous interior surfaces, a minimum of doors and no windows, and incorporating air-conditioning with provision for bacterial filtration or destruction, and proper levels of humidity and ventilation, are recommended. Some details are given of the barrier system of operation, sterilization of food and bedding materials and a vacuum installation for cleaning.—E.V.L.

Hess, E. H. (1959). **Imprinting. An effect of early experience, imprinting determines later social behavior in animals.**—Science **130,** 133-141. **1259**

On hatching, incubator mallard ducklings were transferred in a dim light to cardboard boxes and, before being given food or water, individuals were placed in an experimental runway in which was a decoy male mallard capable of being made stationary or moving,

silent or calling. After a period, usually less than 1 hour, the duckling was returned to its box to be tested later for imprinting strength. For this test it was placed in the runway between two models, the previous one and a differing one, and its reactions to these models indicated the strength of the imprinting.

Some imprinting can occur in newly hatched ducklings and the maximum is at 13–16 hours afterwards, with subsequent diminution. After becoming imprinted to the decoy, the duckling remained beside it and would not follow a live mallard duck with ducklings of its own age whereas unimprinted ducklings did follow and avoided the decoys.

Newly hatched chicks showed no fear up to 13–16 hours after hatching; fear prevents imprinting and causes them to avoid rather than follow a potentially imprinting object. Experiments to test the effect on imprinting of fear-allaying drugs and of surgical interference to the brain revealed strain and breed variation in ability to become imprinted. The influence of the nature of the imprinting object on adult behaviour is illustrated and discussed as are the differences between imprinting and association learning.

—A. Brownlee.

TECHNIQUE AND APPARATUS

Nay, T., Bathgate, A. & Beeston, J. (1959). **Frozen section technique for sheep skin.** — Aust. J. agric. Res. **10,** 886-893. [Authors' summary.] **1260**

A new simplified technique for obtaining histological sections of sheep and cattle skin is described, with details of the freezing microtome necessary for the technique.

Cook, F. W. (1959). **Staining fixed preparations of chicken blood cells with combination May-Greenwald-Wright-Phloxine B stain.** — Avian Diseases **3,** 272-290. **1261**

The stain was made up from 2·5 g. May-Grünwald stain powder, 2 g. Wright's stain powder and 0·5 g. phloxine B in a litre of absolute alcohol. Before use the stain was diluted with 5–12 times its volume of buffered diluent to give pH 6·9–7·1. The appearance of stained blood cells is described and is illustrated in a colour plate.—R.M.

Klein, S. W. & Goodgal, S. H. (1959). **Photodynamic inactivation of monkey kidney cell monolayers.**—Science **130,** 629. [Authors' abst.] **1262**

Monkey kidney cell monolayers exposed to white light in the presence of neutral red (1 : 40,000) undergo degeneration within 24 hours after exposure.

Lieberman, I. & Ove, P. (1959). **Growth factors for mammalian cells in culture.**—J. biol. Chem. **234,** 2754-2758. [Authors' summary modified.] **1263**

A serum-less medium has been prepared which supports the growth of two cultured cells of human origin, at rates approaching those obtained with serum. The cultured cells studied have still unknown growth requirements; indefinite multiplication does not occur in the medium nor can colonies be formed from single cells.

Reyniers, J. A. (1959). **Design and operation of apparatus for rearing germfree animals.**— Ann. N.Y. Acad. Sci. **78,** 47-79. **1264**

Details of design and all aspects of operation are given of apparatus developed over 25 years consisting essentially of a series of isolators which can be connected for the rearing, examination, surgery and transport of germ-free animals. The apparatus can be sterilized without dismantling, and is suitable for all lab. animals. Rats and mice were reared germ-free for 10 generations and held for 900 days; there was only one contamination in 2 years' continuous service involving more than 700 animals.—E.V.L.

Parkes, A. S. & Smith, A. U. (1959). **Transport of life in the frozen or dried state.** — Brit. med. J. May 16th, 1295-1298. **1265**

A general article outlining the principles of preserving life in the frozen or dried state and their possible application to interplanetary travel.—W. E. Parish.

See also absts. **950** (tetrazolium salts in vital staining of bacteria); **1040** (isolation of equine abortion virus in tissue culture); **1274** (book, Coombs test); **1283** (book, cell and tissue culture); **1284** (book, paper electrophoresis).

REPORTS

Australia. Western Australia. (1959). **Annual report of the Department of Agriculture for the year ended 30th June, 1958.** pp. 55. Perth: A. B. Davies, Govt. Printer. **1266**

Tuberculin tests on 14,026 cattle in 230 dairy herds gave 0·98% positive reactors; tests outside the whole milk areas, however, revealed a high incidence of infection, again

emphasizing the need for extension of testing to the butter producing herds. The incidence of PULLORUM DISEASE was 0·18% in 121,222 birds, blood tested. A record total of 22,712 heifers were inoculated against BRUCELLOSIS with Strain 19 vaccine.

VIBRIOSIS is widespread in dairy herds with positive reactors in 65% of those tested. The campaign to eradicate FOOT ROT in sheep was continued; a further 88 properties were freed from infection. MYCOTIC DERMATITIS was again prevalent in sheep—in some flocks there was a high incidence in lambs. Veterinary Officers co-operated with the Public Health Department in a LEPTOSPIROSIS survey in which man, cattle and pigs, on 59 dairy farms, were tested for evidence of *L. pomona* infection. Clinical COCCIDIOSIS was diagnosed in sheep for the first time. This disease and LEUCOSIS continue to be a source of loss to the poultry industry. INFECTIOUS PNEUMONIA is still prevalent in pigs.

The volume of diagnostic work has increased and the scope and variety of the laboratory services has widened.

Investigational work was concerned largely with the study of MINERAL DEFICIENCIES, notably of PHOSPHORUS, COBALT and COPPER and with LUPINOSIS. It was demonstrated that Christmas Island rock phosphate is a safe source of P supplementation for cattle and poultry at the recommended levels. Studies of Cu metabolism in sheep, cattle, and poultry were continued, as was survey work on the occurrence of Cu and Co deficiences. The investigation of the pathogenesis of lupinosis was continued. Lupinosis again caused serious sheep losses and for the first time was incriminated as a cause of mortality in cattle.—H. W. BENNETTS.

New Zealand. (1959). **Report of the Department of Agriculture for the year ended 31 March 1959.** pp. 174. Wellington: R. E. Owen. Government Printer. [Items of veterinary interest. pp. 135-168.] **1267**

Livestock condemned under the Stock Act included: 10,551 on account of TUBERCULOSIS; 222, JOHNE'S DISEASE; 105, Actinomycosis and Actinobacillosis; 60, MALIGNANT GROWTHS OR TUMOURS; 30, BOVINE MALIGNANT CATARRH. JOHNE'S DISEASE is spreading widely over newly developed country. Some imported animals have developed clinical disease after arrival.

The incidence of ACTINOMYCOSIS, ACTINOBACILLOSIS, BLACKLEG, BOVINE MALIGNANT CATARRH, NEOPLASMS, TB. in poultry, FOWL POX and INFECTIOUS LARYNGOTRACHEITIS remains relatively unchanged.

191,289 cattle in dairy herds were tuberculin-tested and 2·7% reacted. In the districts initial tests showed 7·8% infected among 37,933 cattle. Repeat tests of 142,393 cattle showed 1·1% reactors. BRUCELLOSIS in cattle is controlled by vaccination of young female calves (58,225 in the year). Some unvaccinated herds had 10% abortions.

In an outbreak of MUCOSAL DISEASE 190 cattle died or were slaughtered. This is described as "a fatal disease of cattle characterised by rapid loss of condition, diarrhoea, ulceration of mouth, oesophagus and stomach, and inflammation of the bowels and kidneys". A virus has been isolated and is being studied.

The cattle tick (*Haemaphysalis bispinosa*) caused heavy infestations on cattle and sheep in the Auckland district. This was successfully suppressed by DDT applications. The cestode *Moniezia expansa* caused losses of lambs in North Island. Nicotine Copper Sulphate dosing stopped further losses. HYDATID eradication is being actively dealt with by treatment of dogs for tapeworm infestation.

Studies on the fungal origin of the FACIAL ECZEMA liver-damaging factor revealed that fungal spores collected at a time when pasture was thought to be highly toxic contained the chemical substance responsible for reactions to the beaker test for toxic grass. Pure culture of the most common species, *Sporidesmium bakeri,* confirmed that this fungus contained the substance in high concentration. Feeding this substance from pure cultures of this fungus produced liver damage characteristic of facial eczema in g.pigs and lambs, and in one lamb jaundice and photosensitization were produced as well as liver damage. Further trials are in progress. It is known that harrowing and regular mowing increased the fungus population, probably because the process increased the dead litter on which the fungus grows. Treating the infected land with slaked lime ½ ton per acre or superphosphate at 6 cwt. per acre and also repeated applications of fungicides which had proved lethal in the laboratory tests, or the application of a culture of *Bacillus subtilis,* a soil organism which inhibits the growth of the fungus in laboratory cultures has no effect on the fungus growth on the land. In studies on the chemical isolation and identification of the toxin, concentration from grass had been brought to a reliable routine with most pasture

samples to a 1 in 70,000 level. Chemical studies appear to have been simplified by the possibility of using the fungus as a source of the toxin.

A crystalline substance has been isolated from routine concentrates of which it represents 15 to 20%. Preliminary study suggests this belongs to the same chemical class as the beaker test substance, though it yields different products on hydrolysis. It is non-toxic and is found on various columns close to where the poison is.

Results of infra-red examinations are in keeping with the idea that the bulk of components of routine concentrates of grass at the 70,000 level, routine concentrates of fungal cultures, the best toxic concentrates of fungal cultures, substance 242, and the beaker test substance belong to a general group of allied substances. It is now considered likely that the poison itself may be allied to these materials.

Assay of extracts on g.pigs demonstrated that a single high level dose can produce severe lesions of facial eczema. In a preliminary experiment at low dose rates typical early facial eczema lesions were detected histologically in one g.pig which was fed one-eighth of the full high level dose over 9 days and killed at 11 days.

Alternative Assays — (a) Injection into the portal vein leading into the liver in rabbits and g.pigs of toxic extracts of grass and fungus produced lesions of the liver indistinguishable from those obtained by feeding extracts. (b) Feeding of rats with high levels of toxic fungal extracts in pellets on the ground produced bile-duct lesions of facial eczema. Mice treated in the same way only showed deposition of fat in the liver cells.

HeLa Cell Studies — The effect of the facial eczema toxin on cells in tissue culture has been investigated. Toxic and non-toxic grass extracts (processed chemically to various stages), fungal extracts, and crude fungal preparations were each tested against standard 250,000 cell cultures. Cell growth was readily inhibited and the colonies destroyed within 2–4 days of the introduction of the toxic extracts into the culture media. Even extracts non-toxic to g.pigs had a similar effect although of a lesser degree.

Other conditions being investigated include Haemolytic Anaemia of sheep on pasture; Hogget Ill-thrift and White Muscle Disease of lambs.—J. A. Griffiths.

New Zealand. (1959). **Report of the Department of Scientific and Industrial Research for the year ended 31st March 1959.** [Holloway, P. N.] pp. 112. Wellington: R. E. Owen, Government Printer. [Items of veterinary interest: Grassland pp. 68-70. Dairy Research pp. 90-92. Meat Research pp. 92-94.] **1268**

The Soil Bureau has been investigating the microbiology of New Zealand soils since 1954 and much information has been gathered of the micro-organisms present in various soils and of their distribution under varying conditions. From investigations begun in February 1957 with the co-operation of the Veterinary Research Officers of the Animal Research Institutes at Ruakura and Wallaceville, a relationship between Facial Eczema and the fungus *Sporidesmium bakeri* has been clearly established. Pure spores of *S. bakeri* have been proved highly toxic to animals at Ruakura. Investigations are now being carried on with the co-operation of other Divisions of the Departments of Scientific and Industrial Research and the Animal Research Stations of the Agricultural Department. In the Grasslands Division, research on the production of rapid growth of grass under controlled conditions, together with the fungus of grass associated with Facial Eczema, is a primary aim, and the genetical basis of compatibility of species and strains of pasture plants with the growth of *Sporidesmium bakeri* is to be studied in collaboration with other Laboratories. In the Plant Chemistry Division large-scale extraction of toxin from "Facial Eczema" grass is being carried out for the Ruakura Station. The "beaker test" substance from *Sporidesmium bakeri* is being studied.

Hogget Ill-thrift associated with a high nitrate content in the pastures is being investigated as part of a long-term study of the chemical factors which influence quality of the herbage.

The increasing incidence of the blood-sucking fly *Stomoxys calcitrans* in New Zealand is causing concern and in some North Island districts the problem is acute. Silage stacks are important breeding sites and the elimination of these sites is more important as a control measure than the use of insecticides on the animals. The use of insecticides on the breeding sites has not proved a successful method of control. A practical solution has yet to be found.

The Meat Industry Research Institute continued to investigate the source of salmonella infection of stock and to devise means

of control. Cultures isolated are sent to the Central Reference Laboratory, Colindale (London) for phage typing. Evidence so far has indicated that infection originates on the farm and may spread during transportation and holding of stock.—J. A. GRIFFITHS.

Federation of Nigeria. (1959). **Annual report of the Federal Department of Veterinary Research for the year 1957-58.** [Taylor, J. I.] pp. 28. Lagos, Nigeria. Federal Govt. Printer. 9d. **1269**

The reorganization of the Department on a co-ordinated divisional basis was completed during 1957 and 1958.

The production of vaccines accounted for a very considerable part of the activities of the Division of Bacteriology and Virology. Approx. 5,500,000 doses of all vaccines were produced and just short of 5,000,000 doses were issued for field use throughout Nigeria, Sierra Leone, Ghana and The Gambia.

In the Virology Division work on the dried goat virus for RINDERPEST was restricted to the production and the tightening up of potency and safety standards. No difficulties were encountered with lapinized rinderpest virus other than intermittent infections in the rabbits used to produce the vaccine.

Strains of NEWCASTLE DISEASE virus from the field continued to cause the disease in a hyperacute form. The main lesions were haemorrhages in the proventriculus and severe ulcerative enteritis of the small intestine. 420,000 doses of vaccine of Komarov strain were issued for field use in Ghana, Nigeria and Sierra Leone. Four samples of material from cattle and pigs suspected of F. & M. DISEASE were sent to Pirbright for typing; three were of virus type "O" and the fourth negative.

In the Bacteriology Division every effort was made to ensure that the vaccine for BOVINE CONTAGIOUS PLEUROPNEUMONIA should arrive in the field in a viable state. The complement-fixation test remained the most suitable serological test for this disease.

In the Parasitological Division one of the most interesting identifications was that of *Dictyocaulus viviparus* in the southern Cameroons. This was the second time that this parasite had been identified in that area.

The Veterinary Training Division received increased emphasis in view of the work being carried out more and more by Nigerians.

The report contains eight full page plates and five appendices. Twelve papers were published by members of the staff.

The Lagos Veterinary Division is the only one detached from Vom.

—D. S. RABAGLIATI.

Northern Rhodesia. (1959). **Department of Veterinary Services. Annual Report for the year 1958.** [Swan, J. F. G.] pp. 16. Lusaka: Govt. Printer. 2s. 6d. **1270**

This year was favourable for livestock, there being ample grazing, and animal health was satisfactory in that all animal diseases were held under control. The value of the services rendered by the African staff in the field under great political difficulties demands special mention.

In research the Pathologist was occupied in studies of the chemotherapy of TRYPANOSOMIASIS, particularly *T. simiae* which was troublesome. Three strains were under study. The incidence of trypanosomiasis rose alarmingly during the year. In 1957 a total of 11,000 doses of trypanocidal drugs administered was considered high, but in 1958 the figure rose to 209,000.

Political disturbances prevented injections against ANTHRAX from being given in some districts but later on after the death rate had risen greatly the owners begged for the return of the veterinary staff.

Deliberate aphthization to speed the spread of FOOT AND MOUTH DISEASE through the entire cattle population in an area has become general, but it is not without risk.

RABIES was confirmed in 88 dogs, one cat, one sheep, one goat, six jackals and eight cattle.

HEARTWATER was common in high grade cattle. Oxytetracycline has not lived up to the claims made for it, but good results have been obtained with sulphadimidine.

In Broken Hill, dogs from a localized area had shown a clinical syndrome of acute abdominal pain, acute nervous symptoms and death. Whenever nervous symptoms appear, rabies is suspected, but brains from affected dogs were persistently negative. The Provincial Veterinary Officer finally identified the condition as acute LEAD POISONING and his diagnosis was confirmed by the public analyst, who found heavy lead contamination of soil and grass samples from the area concerned. This is a matter of some importance to the management of Broken Hill mine.

—D. S. RABAGLIATI.

Bechuanaland Protectorate. (1959). **Annual Report of the Department of Veterinary Services for the year ended 31st December, 1956.** [Roe, J. E. R.] pp. 70. Mafeking, Cape Province: Mafeking Mail (Pty.) Ltd. **1271**

The staff position improved during the year and a full establishment of veterinary officers was achieved. Livestock exports showed a considerable drop and carcass meat was sold to the traditional markets of South Africa, Northern Rhodesia and the Belgian Congo.

Extensive grass fires did great damage to grazings with resultant loss of condition of the stock.

The Veterinary School buildings were finished and furnished.

An anti-Foot and Mouth Disease fence 35 miles long (commenced in 1955) was completed.

Anthrax is controlled by compulsory annual inoculation of all the cattle. Blackleg is endemic throughout the territory but is controlled in the southern half of the Protectorate by an annual free vaccination of cattle under two years of age. Contagious Abortion is also controlled in the south by an annual vaccination with *Brucella abortus* Strain 19 of animals under two years old.

No outbreak of F. & M. disease occurred but Lumpy Skin Disease which first occurred in 1955 spread rapidly.

Rabies, Trypanosomiasis and Sheep Scab all occurred and received attention.

Tuberculosis is uncommon and is usually only found at meat inspection.

—D. S. Rabagliati.

Netherlands. (1959). De gezondheidstoestand van de veestapel in 1958. Jaarverslag samengesteld door de Directeur van de Veeartsenijkundige Dienst. [van den Born, J. M.] **[Livestock health in 1958. Report of the Director of the Netherlands Veterinary Service.]** pp. 43. Netherlands: Staatsdrukkerij Uitgeverijbedrijf. [In Dutch.] **1272**

During the year 2,472 cattle reacted to tuberculin (11 out of every 10,000 tested) and Tuberculosis was confirmed in 898 of them. A further 280 cases were detected at abattoirs. From 1st May 1958 farmers having herds infected with *Brucella abortus* were compelled by law to pay a levy. The levy would be returned if the herd was freed from the disease within 5 years. It was estimated that 100,000 cattle in 21,000 herds were infected.

From the results of a questionnaire about Johne's Disease sent to 449 veterinary surgeons it appeared that 954 of 191,576 farms had chronic infection and that 3,059 cattle were discarded annually because of the disease.

The report also contains notes on the major notifiable diseases, metabolic disorders, miscellaneous conditions and poultry diseases.

—R.M.

Belgian Congo. (1959). Rapport Annuel 1958 du service vétérinaire et de l'élevage du Congo Belge. **[Veterinary Service and Animal Husbandry in the Belgian Congo. Annual report for 1958.]** pp. 16. Léopoldville: Director of Veterinary Services. **1273**

Livestock (breeding, numbers, state and condition of the cattle, pigs, sheep, goats, horses, donkeys and mules) are dealt with separately for each of the six Provinces and for European and African-owned stock.

The Veterinary Laboratory at Elisabethville continues its activities in research and on the production of a diversity of biological products.

A very great increase of Rabies in many parts of the Belgian Congo has stimulated work on the disease and on the protection which can be afforded to man and animals. The question of vaccination of cattle, horses and cats is being investigated and experimentally studied.

The Laboratory continued to control dairy products from local dairies. It also had to solve several questions concerning the technique of pasteurization.

Amongst the biological products made were Flury Rabies vaccine (10,500 doses); Newcastle Disease vaccine (873,450 doses); *Brucella abortus* Strain 19 (7,350 ml.); Fowl Typhoid vaccine (224,300 doses).

It was decided to close the Veterinary Laboratory at Stanleyville from the beginning of 1959.—D. S. Rabagliati.

BOOK REVIEWS

Dunsford, I. & Grant, J. (1959). **The antiglobulin (Coombs) test in laboratory practice.** pp. xiii + 120. Edinburgh (& London): Oliver & Boyd. 12s. 6d. **1274**

This is a most useful book. The antiglobulin test is of great importance and is used all over the world for medical, veterinary and purely research purposes. Here, in one short,

lucid and inexpensive book, there is available an account of all aspects of the test including the methods of producing, refining and assessing the antisera. Its particular forte is the practical use of the reaction about which its experienced authors are particularly fitted to instruct.

The theoretical aspects are perhaps less convincing. The reviewer does not agree with a single word on page 42; and parts of Chapter I are vulnerable, particularly figure 4, which has much the same shape as figure 6 but illustrates a different mechanism and ascribes a similar functional shape to bovine albumin and antiglobulin antibody. It is a pity that this figure, on account of its inherent beauty and symmetry, should have been selected for the dust cover.

But these matters are of little importance, and a wide range of opinions can justifiably be held on serological theory. The book will prove invaluable to haematologists, serologists and technicians and should be in every laboratory practising these crafts.

There is a small misprint on page 15 ("conspicous").—G. Fulton Roberts.

Schmidt, H. (1959). Das Properdin. **[Properdin.]** pp. xi + 150. Darmstadt: Dr. Dietrich Steinkopff Verlag. DM 28. **1275**

A review of the literature since the discovery of properdin by Pillemar in 1954. It forms volume 2 of "Fortschritte der Immunitätsforschung". A section is devoted to the properdin content of animal sera.

—R.M.

—. (1959). **British veterinary codex. Supplement 1959.** pp. xviii + 134. London: Pharmaceutical Press. 35s. **1276**

This Supplement to the 1953 British Veterinary Codex contains 89 new monographs on drugs and many times this number of amendments to existing monographs. Among the new-comers to the Codex are several piperazine compounds, prednisone, prednisolone, corticotrophin (ACTH), tetracycline, polymyxin B, erythromycin, furazolidone, nicarbazin, Johne's disease vaccine, and living attenuated swine erysipelas vaccine. The name chosen for the ethylenediamine tetraacetic acid compound used for treating lead poisoning is sodium calciumedetate.

So extensive are the additions and changes in this supplement that it is unfortunate that the Codex Committee were unable to incorporate them in a second complete edition of the Codex. But because of the continual increase in the number of drugs, it is better to have now this temporary expedient of a supplement than to wait a few more years for a new codex. The Supplement is nicely printed and well bound.—R.M.

Taylor, J. A. (1959). **Regional and applied anatomy of the domestic animals. Part II. Thoracic limb.** pp. viii + 205. Edinburgh (& London): Oliver & Boyd. 27s. 6d. **1277**

Following general remarks on bone as a tissue and as an organ, the author reviews the scapula of the dog from lateral and medial aspects; a very short section follows on a feature (the spine) which will distinguish between the scapulae of the domesticated mammals. This method is repeated for the humerus, radius, ulna and manus, except that in the case of the last named region the other species, for obvious reasons, are not compared. So far, there is little that marks this book off from any other anatomy book that starts with osteology.

When the author comes to the true regional anatomy his style becomes rather less academic and these sections will surely appeal to clinicians. The use of shadow half-tone drawings to show the distribution of nerves is excellent: may we hope that a diagram map of cutaneous innervation will appear in future editions?

The fore limb of the horse is dealt with in a manner similar to that of the dog and a very useful section of 14 pages is devoted to the foot. Seven pages are allotted to the ox (or bovine, as the author prefers to call it).

Approximately a quarter of the book consists of illustrations of very high quality, both aesthetically and descriptively. Most of them are line-drawings, and colour has been used for vessels and nerves. Certainly all veterinary students should be well acquainted with all its contents and much of it will also be very valuable to practitioners.—R. N. Smith.

Trotter, D. M. & Lumb, J. W. (1958). **McLeod's bovine anatomy.** pp. ii + 267. Minneapolis: Burgess Publishing Co. 2nd revised edit. $5.50. **1278**

"The lack of a detailed description of many structures of the bovine is a serious handicap to veterinarians". This prefatory remark is made by the author as a reason for presenting these mimeographed notes. It is hard to believe that the first 80 pages (on the osteology of the skull and the myology of the whole body) will do much to relieve this

handicap, even with the help of the seven crude diagrams.

Forty pages on the respiratory tract and digestive system (omitting the liver and all the alimentary tract from the end of the oesophagus to the anus) are followed by 50 pages of angiology. A 20 page description of the uro-genital system is followed by 50 pages of neurology. This book ends with two pages on the hoof. The distribution of the free-hand diagrams works out at about one every ten pages.

There are many interesting facts in the text, but the revisers would have done better to have delayed publication until they could present either a complete text on the ox, or a series of authoritative works on each system, rather than this collection of incomplete data, which as they admit needs to be supplemented by other current texts.—R. N. Smith.

Krölling, O. & Grau, H. (1960). Lehrbuch der Histologie und vergleichenden mikroskopischen Anatomie der Haustiere. **[Textbook of histology and comparative microscopic anatomy of domestic animals.]** pp. xi+554. Berlin (& Hamburg): Paul Parey. 10th Edit. DM 136. 1279

Any book from a reputable School of German-speaking histologists deserves serious consideration, and the new tenth edition of this book, in which the authors have endeavoured to bring it into line with modern researches and techniques, is in this category. It could possibly be criticized on the grounds that some of the illustrations are too diagrammatic, and some of the colours in others are too exaggerated to satisfy the pedantic histologist if he compares them with similar microscopic fields, but that could be regarded as a challenge to the teacher. The subject matter reviewed is extensive, the format pleasant, and the bibliography adequate. It is a textbook which can be recommended.

—C. W. Ottaway.

Leathem, J. H. [Edited by.] (1959). **Reproductive physiology and protein nutrition.** pp. x+65. New Brunswick: Rutgers University Press. $2.00. 1280

This booklet comprises the six papers given at the fifteenth annual protein conference of the Bureau of Biological Research, Rutgers University. The first two of these six refer to work done on laboratory rats, and the last to endocrine changes in chronic human undernutrition. From the nature of its subject, this paper can hardly fail to interest most readers nor does it disappoint when read. There are 3 papers, comprising 35 pages, of direct veterinary interest covering nutrition in mammary physiology and in relation to hormone metabolism; and the effect of feed level on growth rate, attainment of puberty and litter size. The last named is a review of some 30 papers nearly all American. The very important Scandinavian contributions, *e.g.* by Moustgaard, are ignored. This criticism is not applicable to the mammary physiology review which is perhaps the best of the three papers on domestic animals. The paper on hormonal relationships is a very concise summary, eminently readable, but with undue bias towards the American literature.

—F. L. M. Dawson.

Rosenberger, G. & Tillmann, H. [Edited by.] (1960). J. Richter/R. Götze, Tiergeburtshilfe. **[Richter & Götze's veterinary obstetrics.]** pp. xix+904. Berlin (& Hamburg): Paul Parey. 2nd edit. DM 178. 1281

This monumental work, including 615 illustrations (71 coloured), is the result of the collaboration of 9 prominent East and West German authors, besides the two editors, and of five other contributors whose names will be even better known to English-speaking readers, Professors Benesch, van der Kaay, Lagerlöf, Rasbech and Vandeplassche. Nearly all the chapters have been rewritten, but in each case with the object in view of building on the framework provided by the original authors, whose names continue to head their respective contributions.

The first 187 pages comprise an account of the normal physiology of pregnancy, parturition and the puerperium. Tillmann's 13-page section on pregnancy diagnosis is presumably not claimed as exhaustive; the possibilities of the Papanicolaou-type test in sheep and goats are not mentioned. A 120-page chapter on the pathology of pregnancy includes contributions on disturbances of duration and of metabolism by Vandeplassche. 300 pages on pathology of parturition include sections from almost all the contributors. Benesch writes *inter alia* on embryotomy in carnivora, van der Kaay is one of those describing this procedure in the larger animals while Lagerlöf and Rosenberger cover maternal anomalies including torsion, and Rasbech deals with abnormalities of the membranes and cord. Puerperal pathology and that of the new-born are dealt with by Aehnelt, Rosenberger, and Merkt. Their

sections on the infectious diseases of the newborn are particularly comprehensive. But the treatment of acute puerperal metritis is described largely in terms of (German) proprietary drugs; the dosage expressed as "so many capsules" or "rodlets" raises a difficulty for the foreign user of the book, while the final chapter on legal aspects applies naturally only to the German Federal Republic.

All in all this publication represents a notable achievement; as a work of reference it should provide some useful information on every conceivable type of case. The illustrations and directions for dealing with the various types of dystokia are particularly clear.—F. L. M. Dawson.

Smythe, R. H. (1959). **The examination of animals for soundness.** pp. ix+145. London: Crosby Lockwood & Son Ltd. 13s. 6d. **1282**

In this book of some 140 pages there are chapters devoted to the examination for soundness of the horse, cow, sheep, goat, pig, dog and cat; and one chapter that deals with the ageing of animals. The author has recruited the aid of Mr. J. K. Bateman and Miss M. Bentley for the chapters on the examination of the Greyhound and cat respectively.

The author has, quite understandably, gone into considerable detail about the examination of the horse, so that rather more than half the book is taken up with this subject. As far as the reviewer is aware nowhere is there such a composite picture of the examination of the horse for soundness as this, other than in the incomparable writings of the late Professor J. Macqueen that appear in Wooldridge's Encyclopaedia. The latter text is, alas, out of print and not readily available to the practitioner. In this respect alone, therefore, Smythe's new book fills a very definite need and especially since the welcome revival of horse keeping in Great Britain has brought about a marked increase in the horse work in most mixed and large-animal practices.

In a text such as this it must be difficult to decide just how much detail should be provided concerning each point of unsoundness. The author has tended rather to overelaborate, especially when dealing with some of the limb defects met in the horse. The chapter on the horse is packed with facts which, in the reviewer's opinion, would be more easily digested if the several body regions had been considered under separate headings. This layout would also facilitate reference to specific points.

The examination of the farm animals and the dog and cat have been adequately covered. The ageing of animals is an important and integral part of any examination for soundness and the inclusion of a chapter on dentition is therefore decidely useful.

There is little doubt that this book will be a "must" for the veterinary student and new graduate but no-one, however experienced, can fail to learn something because it bears the stamp of a very considerable personal experience with animals.—L. C. Vaughan.

Paul, J. (1959). **Cell and tissue culture.** pp. viii+261. Edinburgh (& London): E. & S. Livingstone Ltd. 30s. **1283**

Dr. Paul has written this book in an attempt, as he himself puts it, to provide an up-to-date account of the techniques and applications of tissue culture. This was considered necessary, since on account of the rapid development of the subject and its extension to most fields of biological research especially virology and biochemistry the excellent texts prepared by other authors were already outdated. In this attempt he has succeeded and he has given a useful and informative account of the various standard procedures which may be used in tissue culture.

He begins the book with an outline of the structure and metabolism of the cell, which leads into a chapter on the cell and its environment and the media requirements for cell cultivation. Parts II and III of the book deal with the preparation of materials and include information on sources of apparatus, the set up of a tissue culture laboratory and methods of preparing tissue cultures and maintaining cell lines. In the final part he describes some of the applications of tissue culture techniques such as morphological studies, quantitative metabolic studies and virology and host–parasite relationships. The practical details and instructions are excellent and this reflects the experience of the author and his colleagues at the Glasgow tissue culture laboratory and at the Tissue Culture Association's annual training course, of which he is director. To a certain extent the first three chapters on cell structure and metabolism and the last three chapters on applications are simplified and incomplete; but this is balanced by the provision of an extensive bibliography on each subject at the end of each section.

The methods put forward are well within the compass of a reasonably equipped laboratory, and since the book includes techniques suitable for plant and cold-blooded animal tissue culture as well as for avian and mammalian cell culture, it should be of excellent value to all, beginner and experienced worker alike.—R. F. Sellers.

Wunderly, C. (1959). Die Papierelektrophorese. **[Paper electrophoresis.]** pp. 202. Aarau (& Frankfurt): H. R. Sauerländer & Co. 2nd Edit. DM 18.80. **1284**

Since the first edition of this handbook appeared in 1954 the technique of paper electrophoresis has become more widely employed as a rapid convenient semi-quantitative method for the physical separation of biochemically important substances which are closely related chemically. This new enlarged edition deals more fully than previously with theoretical principles and general technical methods. In the section devoted to specific applications of this technique by far the larger part deals, understandably, with the separation of proteins from serum and other biological fluids. Other classes of substances rather more briefly mentioned include nucleic acids, viruses, hormones, vitamins, antibodies, allergens and inorganic ions. Where actual working details for these electrophoretic separations are lacking, they may be obtained from the literature, more than 1,600 references to which are given.—D. S. P. Patterson.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review]

Brandly, C. A. & Jungherr, E. L. (Edited by) (1959). **Advances in veterinary science. Vol. 5.** pp. xi + 450. New York (& London): Academic Press Inc. $14.00.

Dalrymple-Champneys, W. (1960). **Brucella infection and undulant fever in man.** pp. xii + 196. London (New York & Toronto): Oxford University Press. 25s.

Francis, G. E., Mulligan, W. & Wormall, A. (1959). **Isotopic tracers. A theoretical and practical manual for biological students and research workers.** pp. xx + 524. University of London: The Athlone Press. 2nd Edit. 52s. 6d.

van Goidsenhoven, C. & Schoenaers, F. (1960). Maladies infectieuses des animaux domestiques. **[Infectious diseases of domestic animals.]** pp. 852. Paris: Vigot Frères. Liége: Desoer.

Hoffmann, G. (1959). Histologischer Kurs. Kurze Einführung in die Histologie und mikroskopische Anatomie der Haus- und Laboratoriumstiere. Teil I. Technik, Zellen- und Gewebelehre, allgemeiner Organaufbau. **[Histology of domestic and laboratory animals. Part I. Technique and general morphology.]** pp. x + 159. Jena: Gustav Fischer. DM 24.

Mozley, A. (1960). **Consequences of disturbance. The pest situation examined.** pp. x + 61. London: N. K. Lewis & Co. Ltd. 9s.

Nickel, R., Schummer, A. & Seiferle, E. (1960). Lehrbuch der Anatomie der Haustiere, Band II. Eingeweide. **[Textbook of anatomy of the domestic animals. Volume 2. Viscera.]** pp. xiii + 411. Berlin (& Hamburg): Paul Parey. DM 98.

Pallaske, G. (1960). Pathologische Histologie. Leitfaden der Histopathologie für Studierende der Vet.-Medizin und Tierärzte. **[Veterinary histopathology.]** pp. xxii + 457. Jena: Gustav Fischer. 2nd Edit. DM 49.

Pool, W. A. (Edited by) (1959). **The veterinary annual.** pp. xxiv + 363. Bristol: John Wright & Sons Ltd. (Toronto: The Macmillan Co. of Canada Ltd. Baltimore: The Williams & Wilkins Co.) 42s.

Ruthe, H. (1959). Der Huf. Lehrbuch für den Hufbeschlagschmied. **[The hoof. Textbook for farriers and veterinary students.]** pp. xi + 198. Jena: Gustav Fischer. DM 17.25.

Seiden, R. (1960). **Veterinary drugs in current use.** pp. 128. New York: Springer Publishing Company, Inc. $2.25.

Stableforth, A. W. & Galloway, I. A. (1959). **Infectious disease of animals. Vols. I & II. Diseases due to bacteria.** pp. x + 810. London: Butterworths Scientific Publications. 160s.

Villee, C. A. (Edited by) (1959). **Gestation. Transactions of the fifth conference, March 11, 12 and 13, 1958, Princeton, N.J. [Sponsored by the Josiah Macy, Jr. Foundation.]** pp. 262. New York: Josiah Macy, Jr. Foundation. $5.75.

Printed by Charles Burrell & Son, The Castle Printing Works, Chertsey, Surrey

Putting a name to it...

HOECHST

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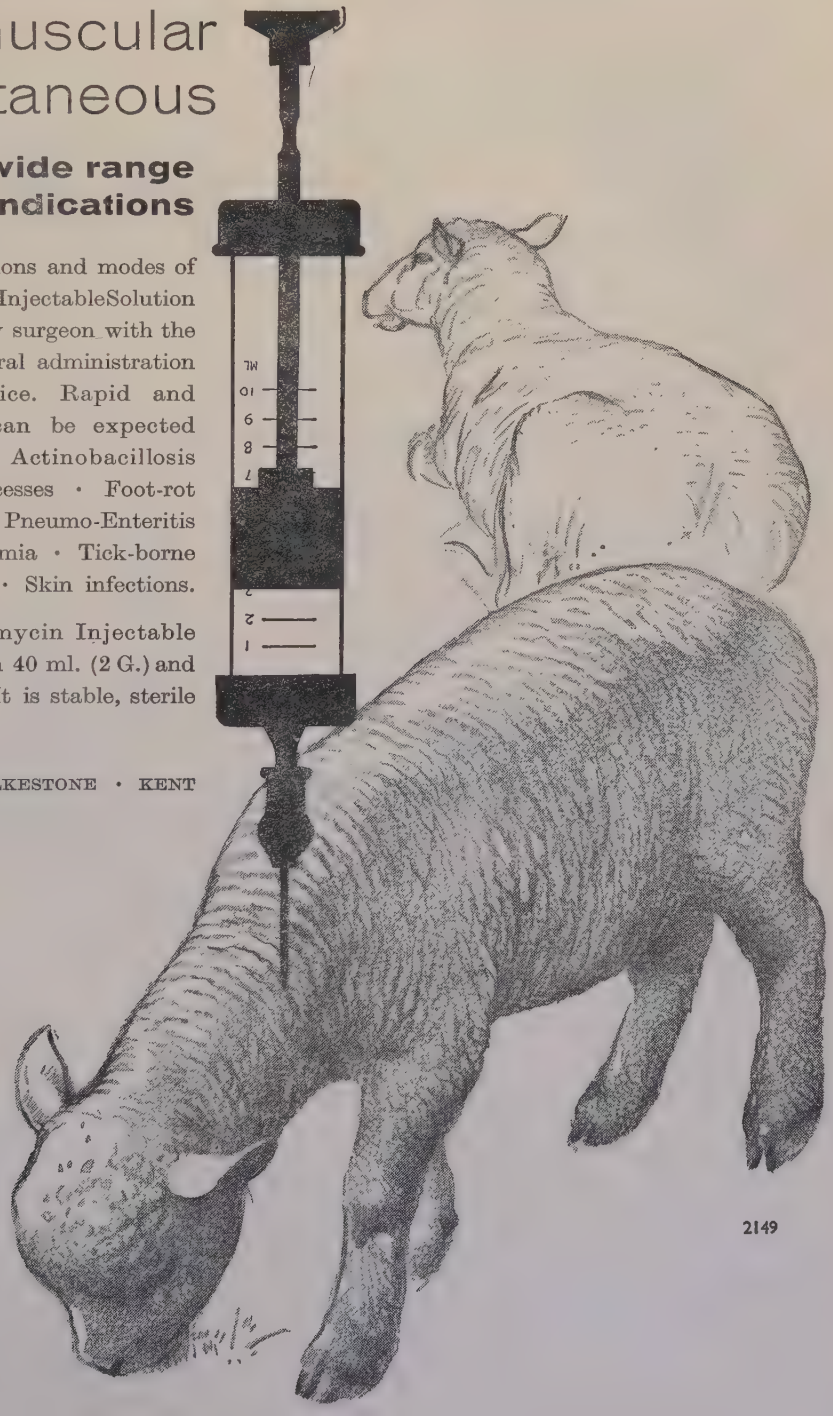

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ERRATA

V.B. 30, abst. 746. The joint-author's name should read: Maghami, G.

abst. 1089, line 4 of abst. For *Dermatobia hominis* read: *Hypoderma.*

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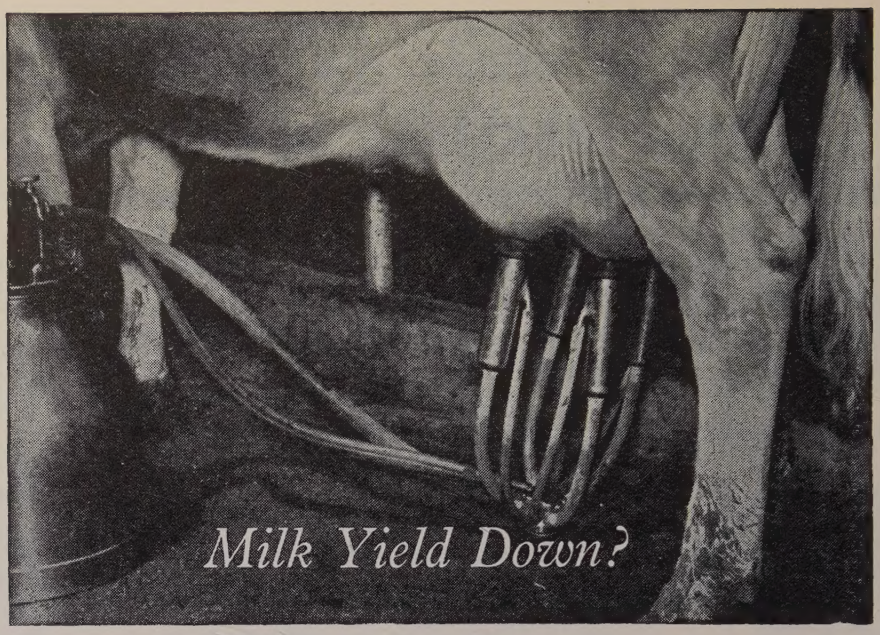

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